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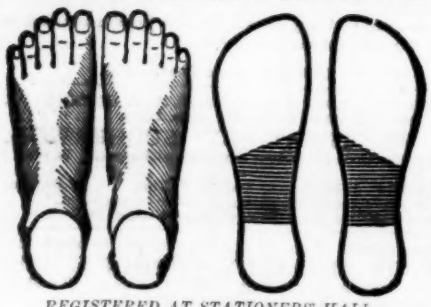

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An Address
ON
GUNSHOT WOUNDS OF THE CHEST.

Delivered before the Medical Society of London on Jan. 17th, 1916,

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MR. PRESIDENT AND GENTLEMEN,—In opening this discussion on wounds of the chest I shall necessarily deal with the subject from the point of view of the physician; there are many problems of surgical interest that will doubtless be dealt with by others. The clinical material on which these remarks are based was observed in the base hospitals in France, more especially at Boulogne, during a period from October, 1914, to the present time, and it was not only very abundant, amounting to many hundred cases, but also included very many cases of the greatest severity. Many cases, during periods of heavy fighting, reached the base on the second or third day after the wound, but usually they arrived at a later period—e.g., a week, and in a few instances patients were kept nearer the front for two and three weeks prior to removal to a base.

I also had the opportunity of seeing a small number of cases within 24 hours or less of the occurrence of the wound, at the casualty clearing stations nearest the actual fighting. It was difficult to make complete observations on such cases owing to the conditions obtaining at the time of a big action, but some observations on the early physical signs were made. Major Elliott, who was associated with me, made a very thorough clinical study of the cases at the base hospitals, and also carried out the treatment by aspiration with oxygen replacement in a large series of cases. A short account of our results has already appeared in the *British Journal of Surgery*, vol. iii., No. 10, 1915. Captain H. Henry conducted the bacteriological inquiry of our cases and also made a large number of post-mortem examinations, and this officer will doubtless give the meeting the results of his experience.

Wounds of the chest may involve the chest wall only, or they may penetrate and involve the lung also, but it is important to remember that serious chest conditions, and especially hæmothorax, may arise from wounds not apparently affecting the chest at all—e.g., wounds of the neck, arm, abdomen, &c. Thus it may happen that in a case of hæmothorax, where three or more pints of blood are present in one side of the chest, there is only a small wound of entry, perhaps even a healed one, in the arm or neck. The chest condition may be overlooked in such cases, as the respiratory symptoms are not necessarily well marked, or if physical signs and symptoms are observed the possibility of hæmothorax is overlooked and some other condition—e.g., pneumonia—diagnosed.

Wounds Limited to the Chest Wall.

These may give rise to one or more of the following conditions: (1) Hæmoptysis; (2) hæmothorax; (3) pleurisy—sometimes with effusion and then usually giving rise to an empyema of the type familiar in civil practice; and (4) pneumothorax.

Hæmoptysis from a wound limited to the chest wall may arise as a result of bruising and impaction of the lung, this being produced apparently as a direct result of the blow on the chest and without any injury of the parietal pleura being discoverable on post-mortem examination. This is of some clinical importance, since the occurrence of hæmoptysis after a gunshot wound of the chest must not be regarded as absolute proof that the missile has penetrated and injured the lung. One of the most severe cases of hæmoptysis occurred in a man whose chest was struck possibly by a stone or lump of earth as a result of a shell explosion, and where not only was there no wound but no evidence of a fractured rib could be detected. Many instances of hæmorrhagic extravasation into the lung as the result of a non-penetrating chest wound have fallen under notice.

The hæmothorax following a non-penetrating chest wound is not markedly different from the more common variety, but it is usually of small size, and not uncommonly is infected.

The pleurisy associated with these wounds is often at first dry, manifesting its presence by pain and friction, and subsequently effusion occurs. Many of these cases are of streptococcal origin and run the usual course of a streptococcal empyema. When the fluid is removed it does not have the appearance of hæmothorax fluid, but is either serous or frankly purulent.

The cases where pneumothorax results from a wound of the chest wall are not very numerous, but they form a remarkable group in that not uncommonly there is a very large opening into the chest capable of admitting several fingers, or even the whole hand. In others the opening is small, and the air rushes in and out with each respiratory movement. In the cases where there is a large gaping wound in the lower half of the chest the lung is often clearly visible, and I do not think that the entire lung is always completely collapsed; there may be some movement and entry of air into the upper lobe. On the other hand, where the wound laying open the chest is in its upper part and even when it is relatively small, the signs of a complete pneumothorax are more obvious. Many of these cases with large gaping wounds freely opening the pleural cavity do well, notwithstanding their apparent severity. In the cases where the wound is small and in the upper half of the chest wall, a counter opening in the lower chest is generally required, as the pleura in all these cases is infected and drainage is necessarily imperfect from the wound. Very serious cases of this type have recovered after free drainage from the lower part of the pleural cavity.

Perforating Wounds of the Chest and Lungs.

These may give rise to one or more of the following conditions:—(1) Hæmothorax; (2) pneumohæmothorax; (3) pneumothorax; and (4) laceration of lung, abscess, gangrene, &c.

Owing to the limited amount of time available, and also owing to the interest of the conditions to the physician, I propose to deal mainly with the subject of hæmothorax and pneumothorax on this occasion.

As already mentioned, hæmothorax may result from a wound of some other region than the chest, especially the neck, arm, or upper abdomen; further, hæmothorax and even pneumothorax may be found on the side opposite to the wound of

entry in the chest, and without any obvious or marked lesion on the side of entry. These cases are sometimes rather puzzling at first sight, and especially so when the wound of entry is a clean bullet wound that has rapidly healed. Bilateral hæmothorax from transverse wounds of the chest is not very uncommon, with or without the missile being retained in the body. In some cases the bullet has passed right through the body more or less horizontally; in others it has entered on one side and lodged on the opposite side. In a few rather remarkable cases the pericardium has been injured in transit and a hæmopericardium has been present in addition to bilateral hæmothorax; some of these cases have recovered notwithstanding their apparent gravity. In these cases the hæmopericardium, as a rule, causes but few physical signs or symptoms, coarse pericardial friction being the most marked sign; but in some a marked effusion is present and in a few this is also infected.

When bilateral hæmothorax is present the two collections of blood may be sterile, both may be infected, or, strange as it may seem, one may be sterile and the opposite one infected. Recovery has taken place in all these varieties of double hæmothorax, even when associated with hæmopericardium, although in cases of bilateral infected hæmothorax the patient is necessarily gravely ill and the condition has required the free drainage of both pleural cavities. I have seen one remarkable case of *right*-sided hæmothorax successfully treated by aspiration, where the condition resulted from a bayonet wound with the wound of entry on the *left* side at the lower left costal margin and where it was extremely difficult to understand how the heart had escaped injury.

Subcutaneous or surgical emphysema is often present in cases of hæmothorax, especially during the first few days after the occurrence of the wound. It is usually limited in area but occasionally it is very extensive, and I have seen one case where with a moderate hæmothorax the surgical emphysema involved the whole body, including the extremities, extending from the face to the ankles. Its presence always makes the exact diagnosis of the chest condition difficult, and leads sometimes to strange errors of diagnosis. Thus the peculiar percussion note obtained may lead the inexperienced to diagnose pneumothorax with great confidence, and the crepitations produced by the pressure of the stethoscope may similarly mislead and suggest the presence of pneumonia or pleurisy, more especially as the emphysematous area is often painful on pressure.

Hæmothorax may be either sterile or infected, and in a series of about 450 cases mentioned in the paper in the *British Journal of Surgery* (vol. iii., No. 10) by Elliott and myself, infection was present in 25 per cent. as determined by bacteriological methods by Captain Henry.

Sterile Hæmothorax.

The amount of bloody fluid present in the pleural cavity may vary from a few ounces to between four and five pints. On post-mortem examination the parietal pleura especially below the wound of entry is covered by a layer of firm fibrinous clot of moderate thickness, ¼ in. or slightly more. The pleura covering the collapsed portion of the lung is often similarly covered by a layer of fibrin, and thus the wound in the lung sealed. The degree of collapse of the lung necessarily varies with the amount of the hæmothorax, and in moderate and large effusions the lower lobe or the middle and lower lobes are collapsed and either pressed back towards the vertebral groove, or pushed up towards the root of the lung, or else pressed inward and flattened against the pericardium. The upper lobe, on the other hand, is over-distended to a remarkable degree and pushed against the anterior wall of the chest; it is often extremely over-distended, so that it reaches well beyond the middle line, the mediastinum being displaced. The upper lobe of the lung is, so to say, floating on the upper surface of the blood, and some of its posterior portion may be dipping into the fluid and collapsed. This over-distension of the upper lobe, or of its anterior portion, is one of the most characteristic features of the condition and explains the extreme skodaic phenomena that are so often seen clinically. Some clot may be found in the posterior portion of the pleural cavity by the side of the vertebral column. The observations made in the series of cases at Boulogne by Elliott and Henry showed that the bloody fluid in cases of sterile hæmothorax, although it presented the appearance of ordinary blood to casual inspection, was really defibrinated blood, containing, in some cases, in addition an exudate derived from the pleura. This fluid, therefore, contains large numbers of red cells, and may also contain lymphocytes, polymorphonuclear leucocytes, endothelial cells, eosinophiles, and myelocytes in different proportions in different cases. Some observers have attempted to determine by an enumeration of the red corpuscles in cases of hæmothorax the supposed degree of dilution of the blood by pleural exudate. This method, however, is quite misleading, as it is not possible to ascertain what proportion of the corpuscles is retained in the clots on the pleura and in the pleural cavity. The fluid removed from the chest by paracentesis not infrequently clots; this we have called a secondary clot dependent on the admixture of pleural exudate. In the cases where a fluid like blood has been withdrawn by paracentesis direct proof has been obtained that it is really defibrinated blood, since it has been shown by Elliott and Henry not to contain any fibrinogen. It is difficult to say when the clotting of the effused blood occurs, but it has certainly taken place by the fourth day, as proved by the character of the bloody fluid removed at this period, and it is very probable that it occurs really very much earlier.

Symptoms of Hæmothorax.

During the first 24 hours there is often much distress and anxiety, the breathing is apt to be painful, and cough is often severe, frequently painful, and ineffectual. Hæmoptysis is present in a large proportion of cases, but its onset is sometimes delayed for two or three days, and when it occurs late like this it is probably often due to bruising of the lung and infarction. Thus an early and a late hæmoptysis may be recognised. The hæmoptysis usually ceases within a week or ten days, but sometimes it is more persistent, but in the cases that reach the base hospitals it is practically never serious, and I only know of one death from hæmoptysis in the whole number of cases that have come under my observation. Cough is sometimes very distressing and persistent, and in several cases where the hæmothorax was only of very moderate quantity the cough has been arrested at once by paracentesis. Dyspnœa is very marked as an early symptom, but after 24 to 48 hours it is much less marked, and it is very remarkable how little dyspnœa is observed in a case of hæmothorax,

even when three pints of blood or more are present, provided the patient is semi-recumbent and at rest. The least exertion, however, in the first week causes very great dyspnœa. Very slight icterus may be noticed about the end of the first week, but this is never so marked as the icterus seen after extravasation of blood into the peritoneum. One of the striking features of these hæmothorax cases is the good colour of the mucous membranes in most cases, even when a very large quantity of blood, i.e., several pints, is present in the chest.

Fever is almost always present in the first few days. It is not as a rule high, 101° or 102° F., and only exceptionally reaching 103° or even 104°. The temperature then returns to normal or to but little above the normal. In many cases, however, fever persists, oscillating between 99° and 103° daily for a prolonged period if expectant treatment only is employed, and these cases may be divided into two groups: One, by far the larger, where after paracentesis and the withdrawal of the bloody effusion, the temperature falls immediately and the patient rapidly convalesces. The other, a remarkable group, where the paracentesis is not followed by any change in the temperature chart, the pyrexia persisting and suggesting the presence of infection, yet bacteriological examination fails to reveal the presence of any infection, and after the lapse of two or three weeks the temperature slowly reaches the normal without any further operative treatment. These cases are not very numerous, but it is difficult to explain their nature; it may be that they are really cases of some mild infection, or possibly the paracentesis for some reason fails to remove the whole of the pleural contents. Very exceptionally yet another type is seen where a non-febrile simple hæmothorax in the course of the second or third week suddenly develops pyrexia, and where after paracentesis the temperature immediately falls and the examination of the fluid shows it to be sterile.

Physical Signs of Hæmothorax.

It might be expected that the physical signs of a simple sterile hæmothorax would be precisely similar to the well-known signs of pleural effusion; this, however, is by no means the case; there are well-marked differences of considerable clinical interest.

The most striking fact observed, when the cases are examined at the front within 12 to 24 hours from the time of injury, is the absence of well-marked signs, seeing the severity of the symptoms present. Displacement of the heart may be present, together with signs denoting a poor air entry on the affected side, the percussion note is only slightly impaired, certainly not markedly dull; the breath sounds are weak and numerous râles and rhonchi may be present, but, as already mentioned, the signs are very slight compared to the cough, dyspnœa, anxiety, &c. Twenty-four hours later the same patient may present the most typical and obvious signs of a large hæmothorax, and then probably the urgent symptoms will have largely subsided.

The affected side may show some bulging and always moves poorly or not at all, the apex beat is displaced, but the degree of displacement varies greatly and is not dependent solely on the amount of the effusion. The vocal fremitus is diminished over the lower part of the chest and increased above over the area of distended lung; the percussion note is short, high-pitched, and dull over the effusion, but over the upper the skodaic resonance is extraordinarily well marked and frequently extends across the middle line behind the manubrium. On auscultation over the lower chest the breath sounds may be weak or absent, or distinctly tubular and weak, or finally loud tubular breathing may be heard over an extensive area. In some cases the breathing may be almost amphoric. In front over the area of skodaic resonance the breath sounds are harsh. The vocal resonance over the skodaic area is increased, over the effusion it is often ægophonic in character, but one of the most curious phenomena is the loud bronchophony and marked pectoriloquy that are so frequently present and lead to the erroneous diagnosis of pneumonia.

In many respects the above signs are similar to those seen in pleural effusion, but there are certain differences. In the first place, the diaphragm on the affected side is extraordinarily high; this is easily demonstrated on the left side either by percussion or by X ray examination. It is exceptional in a case of hæmothorax for the stomach resonance at the lower costal margin to be replaced by dullness, and, strange as it may seem, it is not very unusual on percussion of the front of the chest for the stomach note to merge into the skodaic resonance of the upper part of the front of the chest. Owing to this a hæmothorax may be overlooked or diagnosed as a pneumothorax. In the second place, the skodaic phenomena are much more marked than in pleural effusion. In the third place, loud tubular breathing, increased bronchophony, and pectoriloquy are more marked and more often to be detected in hæmothorax than in pleural effusion. Finally, the heart's apex beat undergoes changes in position that are peculiar. Thus in the first 24 to 48 hours there may be very considerable displacement—e.g., 2 inches or more—and later, with the further development of the signs of the hæmothorax, the apex may return towards its normal position by, say, 1 inch. This movement of the heart may be due to one of two reasons: It is possible that in the earliest stages of what is ultimately a simple hæmothorax there is really, for a time, a pneumo-hæmothorax, and with the absorption of the air in the pleural cavity the heart returns towards its normal position. Or it may be that there is really at no time a pneumo-hæmothorax, but that at first there is but little collapse of the lung, and hence room has to be found for the extravasated blood by displacement of organs. Then, with the development of collapse, the heart returns towards its normal position. I am inclined to believe that the latter view is the more correct.

Another peculiarity of hæmothorax cases is the rapidity with which retraction of the affected side may develop when the effusion is not aspirated. In two to three weeks a case of simple hæmothorax may show marked retraction, even when a considerable amount of blood is present in the pleural cavity. This, so far as I know, is very unusual in pleural effusions. It would take too long to discuss the explanation of these points of interest, but I would like to suggest that, speaking broadly, the physical signs of hæmothorax differ from those of ordinary acute pleurisy with effusion because the phenomena of collapse of the lung, or of portions of the lung, play a larger part in the production of these physical signs—e.g., raised diaphragm, cardiac displacement, tubular breathing, pectoriloquy, retraction of the affected side.

While the above description applies to a large number of cases of simple sterile hæmothorax, there is another large group of cases where the signs are different in that the typical skodaic phenomena are not all present. The vocal fremitus in this second group is diminished instead of being increased over the area of tympanitic or tubular resonance present in the upper chest above the effusion. The breath sounds are very weak, and possibly sometimes distinctly tubular, and the bell sound is absent. These cases are difficult of interpretation; some are doubtless cases of pneumo-hæmothorax with a limited amount of air above the effusion, and this view is confirmed by X ray examination revealing a horizontal level of fluid very labile when the patient is examined in the sitting posture. In others this is certainly not the correct explanation; there is no evidence of air in the pleural cavity and the anomalous physical signs are apparently due to the extreme over-distension of the upper lobe of the lung. The presence of vocal fremitus does not exclude the possibility of pneumothorax, since in cases where oxygen is injected into the pleural cavity vocal fremitus may still be present.

Although the great bulk of cases of hæmothorax present physical signs such as have been just described, there is a third group that presents a remarkable clinical picture that will be of especial interest to our President inasmuch as they afford an instance of the condition first described by him of massive collapse of the lung.[1] In this group, the affected side is motionless, the vocal fremitus diminished, the percussion note dull, the whole of one side of the chest being dull to the clavicle, the breath sounds weak and tubular. In fact, the signs suggest the presence of a very large effusion filling one pleural cavity, but the heart is not displaced to the opposite side, nor is the patient very distressed. Further, in the course of a few days, the signs clear up, and the air entry is re-established except at the base, where the signs of a small hæmothorax are present and persist. X ray examination confirms the diagnosis, and we have plates illustrating the condition before and after re-expansion of the lung. All the cases have been instances of small hæmothorax, and they are of interest not only from the point of view of their causation, but also from the errors of diagnosis likely to arise. Presumably they owe their origin to the chest injury, often a simple traversing bullet wound, causing deficient respiratory movements of the affected side. These cases, as well as the other phenomena of lung collapse alluded to above, seem to show that even simple bullet wounds of the chest tend in some remarkable way to impair the efficiency of the respiratory movements of the injured side when no gross or very painful injury of the chest wall is produced.

Diagnosis of Hæmothorax.

Three questions arise in relation to the diagnosis: first the presence of hæmothorax, secondly, its amount, and, thirdly, its character whether sterile or infected. As regards the first, the presence of hæmothorax, the most common error is to confound hæmothorax with pneumonia. In both the respiration may be hurried and pyrexia be present, together with bloody expectoration, and, as mentioned above, there is much resemblance in the physical signs of the two conditions.

[1] THE LANCET, Nov. 7th, 1908, p. 1350.

Pneumonic consolidation on the side of the chest affected with hæmothorax must be excessively rare since we have only met with two very doubtful instances. In many cases where the signs suggested pneumonia exploration has shown the presence of fluid. In a few instances, more especially where the injury has involved only the chest wall, a pleural effusion has been found and not a hæmothorax.

Difficulty may be experienced in distinguishing between a hæmothorax and a pneumo-hæmothorax with a small quantity of air. Collapse of the lung may mislead, more especially in regard to the amount of hæmothorax present. The position of the apex beat is one of the most valuable physical signs in the diagnosis.

With reference to the size of the hæmothorax, mistakes must necessarily occur. The extent of the dullness is of great value and the degree of displacement of the heart is of some value, but it must be remembered that a large collection of fluid may be present with little displacement of the heart if the collapse of the lung is very complete. A hæmothorax of 2 to 3 pints usually produces dullness as high as the middle of the scapula. The character of the hæmothorax, whether infected or not, can only be determined with certainty by exploratory puncture and the examination of the fluid by a bacteriologist. Generally the presence of infection can be surmised from the facts that the patient is more ill, the dyspnœa more marked, the pulse rapid, the tongue furred, &c.; but some sterile cases show much fever, and some infected cases but little fever. Further, pyrexia may be due to other causes—e.g., the state of the wound, the presence of bronchitis or the existence of some complication, such as contralateral pleurisy or pneumonia. Whereas pneumonia is so rare on the hæmothorax side, it is by no means uncommon as a complication on the opposide side, and contralateral pleurisy is still more common. These inflammatory complications are much more common in infected hæmothorax, but they occur also in the sterile cases.

Treatment of Simple Hæmothorax.

In the earlier months of the war, influenced by tradition, and having but little experience, the cases that fell under my observation were treated purely by expectant methods and aspiration was not employed, owing to the supposed risk of secondary hæmorrhage. Cases treated on these lines do well, but they are liable to be in feeble health and invalided for a very prolonged time. Further, very serious collapse of the lung is apt often to ensue. Post-mortem, as well as clinical, observation showed that secondary hæmorrhage practically did not occur in cases that reached the base hospitals, and, as already mentioned, large numbers of cases reached the base by the third day. Amongst over 500 cases (and probably 1000 cases is nearer the mark) I know of only one certain case of secondary hæmorrhage.

Aspiration with oxygen replacement to avoid the too sudden expansion of the lung suggested itself as a suitable method of treatment in simple hæmothorax, and in the autumn of 1914 Major Elliott and I began treating cases of hæmothorax in this manner, and we have used it ever since. Two distinct benefits ensue: the lung rapidly re-expands and the pyrexia that is so often present rapidly subsides, so that the patient quickly regains his health, and his invalidism is measured by weeks rather than by months. Aspiration

with oxygen replacement is a much more satisfactory operation than ordinary paracentesis thoracis. With ordinary paracentesis it is scarcely ever possible to remove all the fluid at one sitting, and the operation has to be repeated. This is not the case when the oxygen replacement method is employed, and in a large series of such cases it was very exceptional for the operation to have to be repeated. Further, if local anæsthesia is efficient it is possible to remove even very large collections, e.g., 90 ounces, with no serious discomfort to the patient. The fluid is withdrawn, and so soon as the patient experiences a sense of tightness from the change in the pleural pressure the oxygen is allowed to flow in, and when the discomfort has passed off a further quantity of the fluid is withdrawn, and so on until the operation is completed. Difficulties may arise from the cannula becoming blocked with clot, and then the usual methods must be adopted to clear the cannula. If there is much cough, or if the patient is nervous and anxious, a preliminary small dose of morphia is very useful.

This treatment has been, according to our experience, very successful; no untoward results have been observed, and in a large series of cases not one of secondary hæmorrhage has occurred, and I feel confident that it is the proper treatment for any case of sterile hæmothorax of moderate or large size.

It is, of course, needless to say that the most scrupulous care should be taken as regards disinfecting the patient's skin and cleansing all instruments used. Further, an efficient local anæsthetic must be used. In cases so treated there is no re-accumulation of fluid, and I am of the opinion that where this is described in simple sterile hæmothorax, it is really a redistribution of fluid owing to imperfect and incomplete aspiration with some partial re-expansion of the lung.

Infected Hæmothorax.

We found approximately 25 per cent. of the cases of hæmothorax were infected, and Captain Henry's results showed that in some 20 per cent. of the infected cases the infection was derived from the lung—i.e., that the fluid contained lung organisms, and that in the remaining 80 per cent. the infection was derived from the exterior—skin, soiled clothes, &c.

Infected hæmothorax is a more important subject than the sterile variety, as it is vitally important that an accurate diagnosis should be made early and efficient treatment adopted. For these reasons it is imperative that the patient should not be kept at the front longer than is absolutely necessary, as valuable time may be lost. Removal to the base is advisable in cases of hæmothorax towards the end of the first week after the wound, and many cases have benefited from an earlier removal.

In many of the infected cases the clinical picture at first closely resembles that of a sterile hæmothorax, and it is only by exploratory puncture, or even repeated exploratory puncture, that the diagnosis can be certainly made. Usually the pyrexia, dyspnœa, frequency of the pulse, and icterus are more marked, and the patient is obviously often very ill, but it is extremely important to recognise the fact that not uncommonly at first he is not apparently very ill, and then suddenly most alarming symptoms develop, and unless promptly treated death ensues. Sometimes these urgent symptoms are very suggestive of secondary hæmorrhage—e.g., a rapid pulse, cold clammy skin, urgent dyspnœa it was only as a result of some post-mortem examinations made in such cases in the early months of the war that it was ascertained that these symptoms were due not to hæmorrhage as was thought, but to infection with anaerobic gas-producing organisms. Such cases may recover in an extraordinary way if they are recognised and the pleura promptly opened and drained, a local not a general anæsthetic being used.

In another group of cases associated with anaerobic infection very characteristic signs develop suggesting the occurrence of pneumothorax. Thus the heart undergoes rapid outward displacement and a "cracked-pot" percussion note is obtained where 24 hours previously it was absent. The frequency of this "cracked-pot" percussion note is remarkable, and sometimes I think it might be regarded as almost pathognomonic of these cases. These cases are also liable to be erroneously diagnosed as merely cases of simple pneumothorax, as a bell sound is well marked.

The cases associated with streptococci are usually very ill, with much fever, very rapid pulse, furred tongue, and diarrhœa of a severe type is also often present. Contralateral pleurisy is much more common in these cases than in the simple sterile cases, and pericarditis and pneumonia also occur as complications.

Experience showed that the mortality in the septic cases was much reduced by early recognition of the existence of the infection and prompt drainage by resection of a portion of a rib so soon as the bacteriological evidence proved the presence of infection. Delay sometimes occurs as the first bacteriological examination may fail to reveal the presence of organisms in the hæmothorax fluid, notwithstanding the fact that the clinical picture is one of septic infection. A subsequent exploration may then yield a fluid containing organisms, and it is probable that the explanation of the discrepancy is that the organisms are in the interior of a mass of clot perhaps surrounding the missile, and that the fluid in the pleural cavity only gets freely infected as a result of the breaking down of the clot. This may also explain the rapid development of symptoms in some cases that are apparently running a benign course.

Pneumothorax.

I may perhaps generally describe the state of mind one passed through with regard to these cases. When seen in large numbers, in the early months of the war, pneumothorax was constantly diagnosed on account of the weak breath sounds, the tympanitic resonance, the displacement of the heart, &c.; and it was only in the light of post-mortem examinations that the view was found erroneous. One still finds men who diagnose pneumothorax in these cases with great confidence; but, judging from our experience, I think pneumothorax in association with these gunshot wounds of the chest is uncommon. In the series of cases which are recorded in the contribution to the *Journal of Surgery*—a series of some 500—there were only 12 which could possibly be looked upon as pneumothorax, and in only four was it proved that pneumothorax was present, the other eight may not have been of that nature. It is interesting that the pneumothorax was on the right side.

The presence of a pneumothorax produces great complications and difficulties with regard to treatment, whether it be a simple pneumothorax, or whether it be an infected pneumothorax or even slightly infected, because if it is a slightly infected

pneumothorax we are faced with the dilemma that when it is opened by drainage the whole pleural cavity is liable to further infection. In some of our cases we obtained good results by aspirating them for the purpose of withdrawing the air and getting a certain degree of expansion of the lung prior to the resection of a rib. This procedure cannot perhaps be recommended generally, because there are risks about it; if the wound in the lung is only partially healed the aspiration may break down the healed wound. In these cases the aspiration apparatus should be provided with a manometer because—to quote an actual case—you may find in a case of pneumothorax with urgent dyspnœa that the intrapleural pressure is that of the atmosphere, and that aspiration can therefore do no good, because the wound in the lung is patent. Another case, on the other hand, may be found in which the pressure is positive; you can draw off the air and produce a negative pressure, and you can gradually expand the lung, in the course of a few sittings. We have treated a few cases of that sort very successfully in such a way. Obviously, it is a thing which has to be done with great care, and you have to be guided by the pressure readings and by the sensations of the patient. In fact, one is inclined to think—I do not know, because I have not had enough experience to enable me to dogmatise about it—that it is wise to aspirate these cases without prolonged delay, and to try in this way to expand the lung a little before the cavity is laid open.

THE SURGICAL TREATMENT OF GUNSHOT WOUNDS OF THE CHEST.

BY H. MORRISTON DAVIES, M.D., M.C. CANTAB., F.R.C.S. ENG.,

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My opportunities for the investigation of gunshot wounds of the chest have been derived mainly from those cases which have been admitted to my wards at the 3rd London General Hospital and at University College Hospital. I wish particularly to express my indebtedness to my surgical colleagues at University College Hospital, who have allowed me to see and to treat all the cases suffering from wounds of the chest which have been admitted to the military wards.

In the diagnosis and treatment of these patients many interesting problems have presented themselves. In connexion with some of them the number of cases has been sufficient to enable me to arrive at certain general conclusions, but with others, especially where the lesion is pulmonary rather than pleural, either there have been inadequate data, or the time which has elapsed since the injury has not been long enough to enable me to trace the subsequent effects of the disease, or the extent to which the injury and its sequelæ have been mitigated by various forms of treatment.

I propose at present to deal only with certain groups of injuries, and in connexion with these to indicate those lines of treatment which I have found to yield the most satisfactory results.

[1] A paper read before the Medical Society of London on Jan. 17th, 1916.

Hæmothorax.

The number of patients developing a hæmothorax as the result of gunshot wounds of the chest is proportionately so large and our previous experience so small that this lesion becomes one of great interest. The blood in the pleural cavity in the patients who can be transferred to this country is derived usually either from a vessel in the chest wall or from the lung; in some few cases a hæmorrhagic effusion develops as the result of infection. It is rarely possible in the first two groups to recognise the source of the bleeding, and such being the case all patients must be treated as though the hæmorrhage was pulmonary in origin.

The blood in the pleural cavity may be mainly fluid or consist of a massive clot; it may be complicated by the presence of gas or of a serous effusion or by infection. Extensive clotting occurs chiefly in cases of shell or shrapnel wounds, either as the result of the extensive laceration of the tissues exposing the blood freely to the action of the tissue ferment and to broken fragments of rib, or from the introduction of portions of clothing. The clot is not free in the pleural cavity, but is attached, as a rule, firmly along one side, either around the broken fragments of a rib or at the point of entry of the shell fragment into the lung, where possibly some of the clothing has been detached from the metal; or to the diaphragm when the exit of the shell fragment is through that structure. *Per contra*, the blood in a hæmothorax when caused by a penetrating bullet wound is mostly fluid. In the majority of these cases there is a deposit of fibrin, the amount varying in different patients. The fibrin accumulates mainly in the costo-vertebral sulcus and over the diaphragm. Colonel Sir John Rose Bradford, Major T. R. Elliot, and Captain H. Henry suggest that this fibrin is whipped out in layers by the "churning movements of respiration." I find it difficult altogether to accept this statement, as injury to one side of the chest is followed by diminution of movement of the corresponding lung, and compression and immobilisation of that organ as the hæmorrhage increases. It appears to me to be probable that the agitation of the blood necessary for the separation of the fibrin is in many cases caused by the escaping air, from the wound in the lung, bubbling through the blood as it accumulates.

It is unfortunately not possible to determine by the ordinary methods of clinical observation as to whether the blood is fluid or clotted. Radiography even is of little value in this respect, unless air is also present in the pleural cavity. The blood, in such cases, when clotted has not the same abrupt horizontal and shifting upper level, nor does it pulsate with the movements of the heart. This aid to diagnosis, however, can only be of use if the patient is examined before there is an extensive separation of serum from the clot or a secondary pleural effusion.

As I have said before, a hæmothorax may be complicated by the presence of air, by a serous effusion, or by sepsis. It is probable that in most of the cases in which the blood comes from a wound in the lung there is an escape at the same time of air. This air, when small in amount, is difficult to recognise except by radiography, but the recognition of it is of no material importance. The presence of a considerable collection of air, together with blood, is of greater prognostic importance, since there is, on the one hand, marked displacement of the heart and mediastinum and compression of the opposite

lung; and, on the other hand, a greater tendency towards the development of infection. This latter is probably due to the escape, together with blood and air, of the infected secretions from the bronchi. The possibility that the gas in a pneumo-hæmothorax may be the product of gas-forming organisms must not be lost sight of.

Serous effusions develop most frequently as a complication of a hæmothorax in which the blood is clotted and infected. Infection of a fluid hæmothorax is as a general rule easy to diagnose; but the recognition of infection of a large clot, especially when complicated by a serous effusion, may be difficult. In many of these cases the source of infection is particles of clothing, and these form the centre of the coagulum. It may be a matter of three or four days or considerably longer before the growth of the organisms through the clot reaches the surface and infects either the serum, which has separated from the clot, or the secondary serous effusion. During this interval exploration of the chest will reveal nothing more dangerous than a simple effusion. The presence of an infected clot may, however, be suspected from the general state of ill-health of the patient and the swinging temperature.

Exploratory Puncture.

It is not my business to discuss here diagnosis so much as treatment, but as success in the one is dependent on success in the other, and as the character of an effusion is often unrecognisable until the fluid is seen and tested, I wish to deal first with the question of exploratory puncture. Early and if necessary repeated exploratory puncture is, in my opinion, essential to the successful treatment of these patients. Without it it is not possible to differentiate, in the majority of cases, between a simple pleural effusion, a hæmorrhagic effusion, a fluid hæmothorax, a clotted hæmothorax, or at times an infected hæmothorax. When done in the proper way there is no danger, no distress to the patient, and practically no discomfort. All that is needed is a good-class syringe, a small hypodermic needle, a second needle some 5 cm. in length with a correspondingly larger bore, and a small supply of novocaine. The infiltration of the tissues before introducing the larger needle into the chest is but a very slight complication of the procedure, while the effect, both mentally and physically, on the patients of the abolition of the pain from the stab through the pleura is very great indeed, and enables them to tolerate repeated explorations on the same or on a subsequent day with complete equanimity.

Treatment of a Fluid Hæmothorax.

A small quantity of fluid blood in the pleural cavity may be rapidly absorbed; the lung resumes its normal relation to the chest wall and is unhampered in its movements. In such a case there is no need to interfere as the patient will recover completely. Larger quantities, a pint or more, must take longer to disappear; the rate of absorption varies greatly and may even be so slow that the processes of absorption appear to be arrested. This delay, whether of short or long duration, is sufficient to allow the deposited fibrin to become organised and for the pleura in that region to become thickened. The thickening of the pleura and the consequent limitation of the movements of the lung are proportionate to the amount of deposited fibrin and the degree of the organisation of it. The clinical significance of these processes is, I believe, of much greater importance than is usually recognised.

Even though the blood of a fluid hæmothorax of moderate dimensions is after an interval of time apparently completely absorbed, and the lung re-expanding comes into contact with the chest wall, the patient will not necessarily recover his former health and energy. One symptom, shortness of breath on exertion, will persist. This shortness of breath may develop and persist after the absorption and removal not only of a hæmothorax, but also of a simple or tuberculous effusion or of gas, which has been present in the chest for some time. The symptom does not appear to have received the attention due to it, partially because the associated signs are few, and partially also because, the main cause of the trouble having been dealt with, the patient is freed of the chief causes of distress and has been able to resume light work. The shortness of breath found in these cases is not necessarily due to an associated fibrosis of the lung, as it may be present in patients in whom a radiogram will show no such change; it is not necessarily due to emphysema of the opposite lung, or to deficient movements of the chest wall on the same side; nor is it necessarily due to the restriction of lung area, as it may develop during the period of absorption of gas in a case under treatment by nitrogen displacement, but be instantly abolished by the introduction of more nitrogen into the pleural cavity. I would suggest that this shortness of breath is of the nature of a reflex condition dependent on the existence of an adverse ratio of the capacity for expansion of the chest wall and for expansion of the lung. Such a condition is particularly apt to occur when the lung, though able to expand, is hindered in the freedom of its movements by slight chronic thickening of the pleura, not necessarily universal over the surface of the organ. It would follow from this that in order to obtain the most successful results possible, it is necessary to adopt that form of treatment which will obviate to the greatest degree the organisation of the deposited fibrin while the lung is in a state of incomplete expansion; and there can be no doubt that the only treatment which is adequate is the early and complete removal of every considerable accumulation of fluid.

The fluid blood may be completely removed from the chest without discomfort to the patient, without the distressing symptoms of pain or cough, and without the danger of œdema of the lungs, or recurrence of the hæmorrhage, if the method which I described first in 1912[2] and called "oxygen replacement" is adopted. The essential of the method is that the intrapleural pressure, recorded continuously by a manometer, is under absolute control. The oxygen replaces the fluid as it is withdrawn and prevents the development of a high negative pressure, which is the cause of all the danger and distress. The apparatus which I now use consists of a glass container, with a capacity of about 25 c.c., having an opening top and bottom, and a third opening into the side low down. From a cylinder which is connected to the lower opening a stream of oxygen is allowed to flow through the container and escape at the upper opening. The lateral opening is connected by way of a filter to the needle which enters the patient's chest. Above the filter a three-way connexion leads to the manometer; between this and the container is a tap which controls the admission of oxygen into the

[2] THE LANCET, Dec. 28th, 1912, p. 1774.

pleural cavity. As the aspiration proceeds and the manometer begins to register an increasing negative pressure, this control tap is opened and oxygen is sucked into the pleural cavity. The admission of oxygen can be regulated so that it corresponds exactly with the rate of aspiration of the fluid, maintaining a constant pressure. When all the fluid has been withdrawn the intrapleural pressure can be left equal to that of the atmosphere, or at any degree of negative pressure that may be desired.

After the withdrawal of the fluid there is in some cases a reaccumulation, serous in character; this may require a second or even a third aspiration with oxygen replacement. It will be found not only possible in so far as the patient's own comfort is concerned, but also advantageous, to leave a higher negative pressure than on the previous occasion, so as to exert greater traction on, and consequently greater expansion of the lung. The production of such a negative pressure is, of course, permissible only when all danger of a recurrent hæmorrhage has passed. The whole of the oxygen is absorbed within four days, becoming replaced in part by nitrogen and CO_2. When gas is present at the first or subsequent aspirations this should be replaced as well as the fluid by oxygen. The absorption of the oxygen is much more rapid than that of the other gases and helps therefore to maintain, and possibly in some cases to increase, the traction of the lung. This hastens the approximation of the visceral and parietal pleura, which is the surest way of preventing the reaccumulation of fluid.

Clotted Hæmothorax: Sterile and Infected Cases.

Clotted but uninfected blood cannot be dealt with by this simple procedure. As it is necessary to remove the clot, an opening must be made through the chest wall. Adequate room can be obtained only by the subperiosteal resection of some 5 cm. of rib. The clot is detached and removed by some blunt instrument, and if there is no evidence to suggest infection the wound is closed. It is quite easy to stitch up the chest wall so as to prevent all leakage of air. The wound is sewn in layers and the deepest stitches, which should be catgut, must include intercostal muscle, periosteum, and pleura; care being taken to avoid the nerve. At the end of the operation the pleural cavity contains air at atmospheric pressure; this is replaced by oxygen at a negative pressure equal to about 7 mm. of mercury. For this purpose the apparatus already described is used. The whole operation can be done under regional and local anæsthesia if desired, and this is preferable to a general anæsthetic if there is much displacement of the heart. As a general rule a serous effusion will accumulate in the ensuing 48 hours, and must be aspirated by oxygen replacement. There should be no risk of infecting a sterile pleural cavity by these operative procedures. The convalescence is much more rapid and the recovery more complete than by the "wait and see" method.

A hæmothorax which is infected must, as in the case of most empyemata, be treated by free drainage. The opening into the chest can be made through an intercostal space or through the posterior layer of periosteum after rib resection. The former method is most unsatisfactory. The interval between the ribs allows, in the majority of patients, of a small opening only, and it is consequently impossible adequately to explore the cavity or to remove clot or lymph when these are present, while the drainage-tube is too small to ensure an unhindered escape of the pus and débris. There is danger, moreover, of wounding the intercostal artery when the incision is made—an accident which may not be immediately recognised—or of the tube later causing secondary ulceration into the vessels or necrosis of the rib by pressing on these structures. The operation of removing a segment of rib overcomes all these objections and takes only a very few moments longer. Both operations are equally practicable with local or regional anæsthesia. The drainage-tube should be large; its inner end should project but a short distance beyond the parietal pleura and must not touch the diaphragm. Round the part which projects beyond the skin a strip of gauze moistened with some antiseptic should be placed to prevent a secondary infection of the track and of the empyema from the skin. For this same reason early removal of the drainage-tube is advantageous. Chronic sinuses accompanied by continuous slight fever are often due to a drainage-tube which has been retained too long a time.

In those cases of hæmothorax in which the blood forms a massive clot round an infected focus, but which are seen and diagnosed before the serum or secondary effusion has had time to become infected, the chest should be opened and the clot removed as described above. If after two or three days, however, the discharge has not become purulent, the drainage-tube can be removed and the wound allowed to close. After the wound is sealed up there will be a gradual collection of fluid in the pleural cavity, with generally some slight rise of temperature. This fluid must be aspirated by oxygen replacement and the aspiration repeated again later if necessary. The advantage of this method is that it diminishes the risks of secondary infection and of incomplete expansion of the lung, and therefore of chronic empyema and sinus formation.

Whenever the bullet or metallic fragment which has given rise to the infection has lodged in the pleural cavity it must of necessity be removed. Shrapnel bullets are, as a general rule, found in the lower part, lying between the diaphragm and the mediastinum, or between the diaphragm and the chest wall. These bullets are often difficult to locate, as they become concealed by the approximation of the diaphragm to the neighbouring structures, and are covered by a layer of fibrin. When it is shown by radiography and localisation that the bullet is on the thoracic side of the diaphragm, that muscle should be carefully separated from the adjoining tissues and the sulcus explored. Fragments of shell do not so frequently gravitate to the lower part of the chest owing to their irregular sharp surfaces which catch in the tissues.

Pneumothorax.

I have already dealt with those cases in which air is associated with blood or a serous effusion, and in which the liquid is the dominant factor. Occasionally in cases of uncomplicated pneumothorax transferred to this country owing to some violent exertion, in a patient recently injured, or even to some undetermined cause, the volume and pressure of the air increase after arrival. The rate of increase may be rapid and give rise to symptoms of acute distress requiring urgent interference, or it may be gradual. In the former type of case a valve-like opening is present; in the latter there is probably an area of damaged lung

tissue which permits of a leakage of air at a rate slightly higher than that at which the gases can be absorbed from the pleural cavity. The damaged portions of lung heal in the course of time and the openings become obliterated, but in the meanwhile, if untreated, the increasing intrapleural pressure may become a source of great distress or even of actual danger to the patient, and must therefore be relieved. Rapid aspiration or the removal of sufficient gas to produce a negative pressure in the pleural cavity will reopen the pulmonary wound, and the relief thus obtained will be but temporary.

As an emergency measure, when the intrapleural pressure is endangering the life of the patient, a fine bore (0·5 mm.) hollow needle can be thrust into the pleural cavity; the intrapleural air under pressure will escape slowly, thus giving the patient great relief. If the symptoms are not so urgent, a needle connected with a manometer and with the outer air by way of a filter should be used; the needle is withdrawn when the inspiratory pressure reaches zero. The beneficial effects of this trifling procedure may be permanent in the mildest cases; it may last a few days or a few hours only. It is only in those cases in which a reaccumulation becomes serious after a matter of some hours that any other line of treatment is indicated—viz., the establishment of a temporary fistula between the pleural cavity and the outer air. The most suitable instrument for this purpose is a hollow needle such as is used with the record syringe, some 4 to 6 cm. long, according to the thickness of the chest wall, and 0·5 mm. in bore. This needle is driven through the chest wall, fixed *in situ*, and covered with a few layers of sterile gauze. The needle should be withdrawn at the end of 12 hours, but reinserted if necessary.

Before leaving the subject of the treatment of fluids in the pleural cavity, I wish, at the risk of repetition, to emphasise the necessity of having a manometer connected with the pleural cavity and of registering constantly the variations in intrapleural pressure, and of having means of controlling the same during operative interference on the closed chest. If such measures are adopted and if the track of needles inserted into the chest is always anæsthetised, there is the minimum of discomfort and a complete absence of danger to the patient.

It is only with experience that one realises what immense variations in intrapleural pressure can be tolerated, provided the change is not too sudden. I have had, on the one hand, patients in bed with a localised positive pressure equal to 30 mm. of mercury, and up and about with a generalised unilateral pressure equal to 12 mm. of mercury. At the other end of the scale, I have had patients tolerating without discomfort a negative pressure equal to 60 mm. of mercury during quiet respiration, and working with a negative pressure equal to 50 mm. of mercury.

Dry Pleurisy.

The acute pain lasting often for a few days, due to a dry pleurisy, caused at times by the passage of a bullet through the chest wall, can be immediately relieved by separating the two pleural layers by gas. As the separation is required for a few days only, it matters little whether air or oxygen or nitrogen is used. Some 200 c.c. more than the quantity actually required to abolish the pain should be introduced so as to allow for absorption. Owing to the inflammatory condition of the parietal pleura it is more than ever necessary to anæsthetise the track of the needle.

Gunshot Wounds of the Lungs.

In this section I do not intend to deal with those cases in which there has been extensive laceration of the lung and of the chest wall, or with those cases complicated by injury to neighbouring viscera, but will briefly refer to the less severe injuries caused by bullets or fragments of shell penetrating into or traversing the lung tissue. The injury produced by a bullet traversing the lung may lead to pneumonic consolidation localised to the track of the missile only; may give rise to a lobar pneumonia or to consolidation of the whole lung. When the reaction is limited the change in the lung may clear up rapidly, but in the more extensive cases resolution is at times incomplete and a secondary fibrosis develops, which in turn may lead to bronchiectasis. It is at this stage only that surgery can be of any use.

The changes in the lung produced by bullets or metallic fragments which lodge in the organ vary very greatly. In some cases, after the initial reaction, the parenchyma appears able to tolerate the presence of the foreign body, and no complication develops beyond a local encasing fibrosis. Operative measures are therefore unnecessary, and the removal of the bullet should not be attempted, as, in the absence of adhesions, the operation is by no means easy or always successful. In other cases, however, where a shell fragment or bullet has lodged near the hilum and is producing secondary changes by pressure on a bronchus, the removal of the missile should be undertaken as soon as possible, but not until time has been given to allow of the subsidence of the acute stage of the initial reactionary changes.

Gangrene or abscess is an occasional complication of gunshot wounds, and in the majority of cases calls for active treatment. The infected area should be opened and drained in all cases of gangrene, and in those cases of abscess in which the cavity does not clear up within a week or ten days after rupture into and drainage through a bronchus. During the operation a special effort must be made to remove any foreign body if such is known to be present.

In brief, then, it may be said that the removal of foreign bodies from the lung should not be undertaken unless they are producing definite symptoms which are likely to be progressive, and that even then the operation should not be done until the initial reactionary inflammation has subsided.

Harley-street, W.

DOMESTIC ECONOMY EXHIBITION.—The Council of the Institute of Hygiene have decided to continue the exhibition for a further short period, which will now be open from 2 to 5 P.M., and from 10 to 1 on Saturdays.

THE SERBIAN RELIEF FUND.—The Serbian Legation requests that subscriptions intended for the Serbian Relief Fund, of which H.M. the Queen is patroness, should be sent to the Earl of Desart, K.C.B., at the offices of the fund, 5, Cromwell-road, South Kensington, S.W. The Serbian Legation will continue to receive subscriptions for the following Serbian funds: (1) The Archbishop of Belgrade's Fund for the families of the killed and wounded soldiers; (2) the Society of the Serbian Red Cross; (3) the Parliamentary Commission for the Refugees; and (4) the Society of St. Helena for the orphans whose parents have been killed in the war. All contributions addressed to the Serbian Legation, 195, Queen's-gate, London, S.W., for these funds will be gratefully received and acknowledged.

THE RATIONALE OF CHEMOTHERAPY IN SYPHILIS,

WITH A DESCRIPTION OF SOME NEW DRUGS PREPARED WITH THE KNOWLEDGE GAINED THEREFROM.

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As the discovery of some new antisyphilitic remedies is only one of the links in my research chain on syphilis, it will be necessary first of all to state the steps by which this link was forged.

When I had shown that the spirochæta pallida was not the sole cause of syphilis, but only the adult male phase of a protozoon, which I named the "leucocytozoon syphilidis," it was necessary to confirm it, and this I did by working out the chemistry of the organism—a piece of research in which I was ably assisted by R. L. Mackenzie Wallis. As this chemical investigation opened up some new paths which were ultimately to lead to the solution of the *modus operandi* of the Wassermann reaction, it will be necessary to mention the salient points.

I found that the phases of the leucocytozoon syphilidis consisted mainly of a lipoid-globulin, which was more resistant to reagents than the lipoid-globulin of the host's cells—viz., the protoplasm of the plasma cells and of the nucleoli. Further, that its reducing action was also greater, especially in the case of the spirochætal phase, owing to its containing in its molecule a fatty acid not completely saturated. Later I found that the lipoid-globulin of syphilitic sera possessed certain chemical and physical properties similar to those of the organism, and that it was derived in the former from the lymphocytes and from their offspring, the plasma cells, the protoplasm of which was also of a like nature.

The next step resulted in the discovery that the "reagin"—that is, the reacting substance in the syphilitic serum, which is responsible for the positive Wassermann reaction—was the lipoid-globulin of the serum. The complement proved to be the phosphate and bicarbonate systems, which regulate the hydrogen-ion concentration of the fluid part of the serum, and that part of the oxidase-reducase system attached to the lipoid-globulin particles, which regulates the hydrogen-ion concentration of the solid particles of the serum, enabling them to be kept in "solution." Complement proved to be a catalyst or, in other words, the exciter or accelerator of the linking between the reagin and the antigen particles—a linkage which proved to be a purely physical one of adsorption. The active part of the antigen appeared to be its nitrogen content, which was usually present in an amino (NH_2) form. If the amino groups were replaced by methylene imino groups with formalin, according to this formula—

$$H.COH. + R.NH_2 = R.N.CH_2 + H_2O$$

the antigenic action was increased. This was due to the fact that the methylene imino particles were larger than the amino particles. Abundant proof was obtained to show that the colloidal lipoid-globulin particles of syphilitic sera had not only greater adsorptive capacities than their homologues in normal sera, but that they had much bigger molecules. From this it became clear that the Wassermann reaction was a physical reaction, depending upon certain physical properties that syphilitic sera naturally possessed, but which ordinary sera could easily be made to possess; and that it was not in any way a specific reaction.

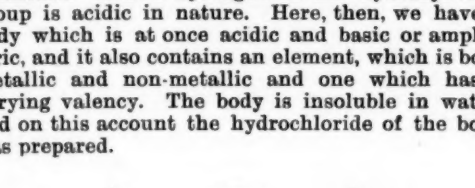
The chief points which stand out will now be seen to be (*a*) the importance of the amino (NH_2) groups, since it is upon the presence of these groups that adsorption is largely dependant; (*b*) the importance of the size of the lipoid-protein colloidal particles; and (*c*) the importance of the physical phenomenon of adsorption.

In the data just given lies the solution of the *modus operandi* of chemotherapy in syphilis, but before explaining the rationale it will be necessary briefly to discuss the chemistry of salvarsan and neosalvarsan, and also to refer to Ehrlich's views as to the mode of action of these drugs.

Salvarsan is the commercial name given to di-oxy-di-amino-arseno-benzol. The constitutional formula of this body is the following:—

Salvarsan.

It will be seen that salvarsan contains two hydroxyl groups (OH) attached to separate benzene rings, two amino (NH_2) groups attached to separate benzene rings, and two arsenic atoms attached to separate benzene rings. The two benzene rings are linked together by the two arsenic atoms. This body has several interesting properties: 1. Arsenic is at once metallic and non-metallic in its properties; here it is tri-valent, but it may be penta-valent. 2. The amino (NH_2) group is basic in nature. 3. The hydrogen in the hydroxyl (OH) group is acidic in nature. Here, then, we have a body which is at once acidic and basic or amphoteric, and it also contains an element, which is both metallic and non-metallic and one which has a varying valency. The body is insoluble in water, and on this account the hydrochloride of the body was prepared.

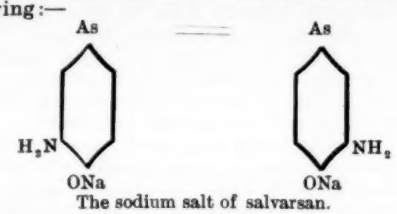


Salvarsan hydrochloride.

The hydrochloride dissolves sparingly in water, but its solution is strongly acid; hence it is not very suitable for intravenous administration. It may be injected intravenously, and is on the whole more potent than the basic solution prepared from it, but it is at the same time more toxic.

From the hydrochloride the sodium salt is prepared by adding sodium hydrate to the acid solution, and this renders it more soluble in water. Therefore the drug is generally administered in

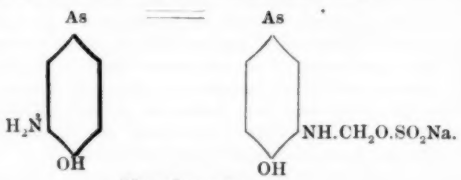
this form. The formula of the sodium salt is the following:—



The sodium salt of salvarsan.

Comparing this formula with that of the fundamental substance, it will be seen that the two hydroxyl groups have been replaced by two ONa groups. The two hydroxyl groups were acidic; the two ONa groups are basic, as are also the amino groups, so that the compound injected is distinctly basic. From this it might appear that "reaction" between the phases of the leucocytozoon syphilidis, since some are more basophilic than others, and vice-versa, and the amphoteric salvarsan plays a rôle in the action the drug exerts upon the syphilitic organism. Investigation later showed that reaction did play a rôle, but it is one which cannot be fully discussed here. As a matter of fact, it is not necessary to have the hydroxyl groups in the salvarsan molecule; they are probably only there so as to prepare the way for making the compound soluble. To render the compound freely soluble it is necessary to sacrifice one or more amino groups, and any interference whatsoever with an amino group at once diminishes the therapeutic action of the drug, and that is why neosalvarsan is not so active as salvarsan.

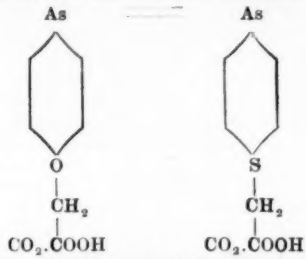
Neosalvarsan is the commercial name for sodium-di-oxy-di-amino-arseno-benzene-mono-methane-sulphonate, and its formula is the following:—



Neosalvarsan.

Ehrlich's work is based upon the principle that there are, in the protoplasm of the parasite, certain chemical groups which are capable of combining with certain chemical groups of the drug injected. The name given to this affinity is "chemoceptor." So far as the arsenical compounds were concerned, Ehrlich was primarily of the opinion that the sole receptors between the chemical groups in the protoplasm of the parasites and the drugs used were the arsenic receptors. That other receptors existed as well was shown only when it was noted that the action of arseno-phenyl-glycine was not affected by previously working on the parasites with an arsenic derivative of the phenyl-oxy-acetic acid and the corresponding thio-compound. The chemical formula of the arsenic compound used is shown in the next column.

Hence it was assumed that acetic acid receptors existed as well. As fatty acid receptors were said to exist in the protoplasm of the parasites, it was only logical to suppose that amino receptors would be found there also. Working upon this hypothesis, Ehrlich discovered salvarsan. According to Ehrlich, salvarsan works by means of its arsenic receptors and its ortho-amino-phenol receptors. When it was discovered that a certain drug had a fatal action on one kind of parasite and not upon another kind, although in both instances a combination occurred, between the drug and the bodies of the parasites, some further elaboration of the



The arseno-thio derivative of phenyl-oxy-acetic acid.

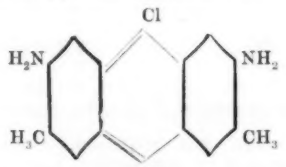
action of salvarsan was required. Consequently salvarsan was stated to act in the following way. The arsenic was considered to be the toxophore group, the benzene ring the carrier, and the amino atoms the haptophore group.

Summing up Ehrlich's views as to the mode of action of salvarsan, all that can be really said is that a union takes place between the drug and the parasite, with a destructive action upon the latter. What the nature of the union is, and why the death of the parasite should follow, are not explained. As a result of Ehrlich's statements, everyone believed that the only active principle in salvarsan was the arsenic. A little investigation soon showed me that the action of arsenic was catalytic—i.e., that it accelerated an action going on spontaneously, but more slowly without its assistance. Since mercury probably acts in the same way, it was necessary to find out why the arsenic in salvarsan should be more powerful than mercury, since, in ordinary circumstances, the latter is a more powerful anti-syphilitic remedy.

A ratio exists between the intensity of action of a catalyser and the degree of the colloid state in which the catalyser is. In salvarsan the arsenic is in a colloidal state, hence its action would necessarily be greater than that of any mercurial compound which we are in the habit of using. The proof of what has been said can be found if we compare the action that different manganese compounds have on plant oxidases. Manganese formate, for instance, has nothing like such a powerful accelerating action upon plant oxidases as colloidal manganese hydroxide. The latter is colloidal and the former is not.

It will now be seen that the action of arsenic is somewhat analogous to that of complement in the Wassermann reaction, while the double benzene ring with its amino groups is analogous to the reagin or the antigen. The reaction beween reagin and antigen is one of adsorption, a reaction accelerated by the catalyst complement. The reaction between the syphilitic parasites, the lipoid-globulin molecules of the serum, and the amino groups of salvarsan is also one of adsorption, a reaction accelerated by the complement present, allowing the arsenic to fulfil its action in increasing the amount of active oxygen. Not only does adsorption take place between salvarsan and the phases of the leucocytozoon syphilidis, but also between the drug and the colloidal lipoid-globulin molecules of both the serum and the plasma cells. Therefore Ehrlich's statement that the drug is parasito-tropic only, and not organo-tropic, cannot hold good. For a drug to be parasito-tropic it must be organo-tropic. Indeed, its organo-tropic properties are more important, since most of the organisms are killed indirectly.

In Ehrlich's own work there appear to me to be two points which require very careful consideration. One is, that parasites which have been rendered arsenic-fast are also pyronin-fast; and the other is, that although salvarsan may be linked on to a parasite it need not necessarily prove fatal to that parasite. If there is a relationship between arsenical immunity and pyronin immunity it cannot be the arsenic to which the parasites become immune. If the formula of pyronin is studied:



Pyronin.

it will be noticed that there are two amino groups. Now, there are two amino groups in salvarsan, and, from what has been already said, it would appear to be due to these two amino groups that the drug becomes attached to the syphilitic parasites, the plasma cells, and the lipoid-globulin molecules of a syphilitic serum. Note that the amino groups in both salvarsan and pyronin are in the ortho position.

The fact that salvarsan can become attached to parasites, and yet not be fatal to them, is an observation in which there is a great deal wrapped up. During the time when I was working at the rationale of the Wassermann reaction I thought that for adsorption to take place between two molecules, both of which possessed amino groups, it was necessary that they should have homologous stereo-chemical molecular configurations. This idea soon proved to be wrong when fixation occurred of a non-specific antigen and of an antigen whose amino groups had been converted into methylene imino groups by formalin, respectively, with the serum lipoid-globulin from a case of syphilis. As a result of further experiments I proved that the complement-fixation test, as applied to syphilis, in contradistinction to the true bacterial complement-fixation tests, depended not upon the molecules having homologous stereo-chemical molecular configurations, but solely upon their number and size. Application of this to the action of salvarsan confirms the points just mentioned. The attachment of salvarsan to the syphilitic parasites, to the plasma cells, and to the lipoid-globulin molecules in the serum in a case of syphilis cannot possibly be due to an homologous stereo-chemical molecular configuration between the adsorbed molecules, since for one thing alone salvarsan is an optically inactive body. The adsorptive capacity as a whole appears to be greater in the case of a syphilitic serum than in the case of a serum from any bacterial disease, and it appears to be greater according to the stage of the disease.

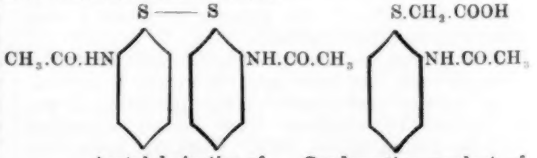
As the lipoid-globulin molecules from a late case of syphilis are richer in carboxyl groups than those from an early case of syphilis, it follows that any substance they happen to adsorb will tend to break down the molecules. The first action of breaking down the lipoid-globulin molecules is to increase the area over which they can work; hence the reason why late syphilitic lesions disappear more quickly under treatment than do early ones. In my opinion, in the case of syphilis and in all protozoal diseases, the lipoid-globulin molecules appear to be bigger and to have a greater adsorptive capacity than the lipoid-globulin molecules in the serum of bacterial diseases.

The bigger the size of the molecule, and the greater its adsorptive capacity, the more easily will a drug like salvarsan be adsorbed and the more readily the adsorbed compound will break down. When the lipoid-globulin first breaks down the area of its action is widened; hence the catalytic action of the arsenic will have its fullest play. If salvarsan became attached to a small molecule the adsorbed compound would not break down; at all events, not until much later than it does in the case of syphilis. This would mean that the arsenic would get little chance of acting as a catalyst. Therefore salvarsan only acts in protozoal diseases because of the physical state of the lipoid-globulin molecules of the serum, and it fails to act as a bactericidal agent because the lipoid-globulin molecules in the serum of bacterial diseases do not possess the requisite physical properties. This shows how important the organotropic properties of the drug must be.

Salvarsan becomes attached to the lipoid-globulin molecules of the syphilitic parasite, the plasma cells, and the serum by virtue of its ortho-amino groups and of the peculiar physical properties of protozoal lipoid-globulin. It attacks those phases of the leucocytozoon syphilidis in which reaction is most marked, especially the spirochætal phase, in virtue of its free hydroxyl groups directly, while its main action on the other phases is indirect. The arsenic presumably becomes converted into an hydroxide, in which form it acts as a peroxidase. The action of a peroxidase is to convert a peroxide into active oxygen. If active oxygen is formed in this way it is only natural to suppose that an analogous process exists to produce active hydrogen. In other words, the existence of an oxidase system necessitates the presence of a reducase system. All we know of a reducase system is that in vitro an extract of liver in the presence of an aldehyde will convert methylene blue into its leuco-base owing to the free hydrogen that is formed.

As a result of experiments, into which I cannot go farther here, I found that, in vivo, it was probably a di-sulphide protein which took the place of the liver extract, which in the presence of a perhydride formed mercaptan, peroxide, and active hydrogen. As a metallic element is necessary for the oxidase system, a non-metallic element appeared to be necessary for the reducase system—namely, sulphur. Therefore it struck me that the action of salvarsan, which I considered acted as a peroxidase, might be enormously enhanced if a markedly adsorbed sulphur compound could be prepared.

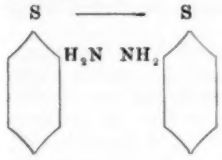
I prepared two basic and two acidic compounds. The first acid compound was the acetyl derivative of di-ortho-amino-thio-benzene, and the second acid compound was the condensation product of the base with chloracetic acid.



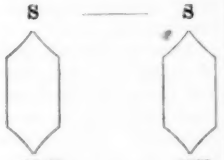
Acetyl derivative of intramine. Condensation product of intramine with monochloracetic acid.

These two products may be quickly dismissed, as both were extremely painful when injected intra-

muscularly, and their therapeutic action was practically *nil*. The two basic compounds prepared were, di-para-amino-thio-benzene and di-ortho-amino-thio-benzene. As the therapeutic action of the former was not so good as that of the latter it was discarded.



The di-ortho-body or intramine.



The di-para-body.

Di-ortho-amino-thio-benzene is called, for short, intramine—a name registered by the British Drug Houses, Limited, who have kindly consented to supply the drug.

Although I thought I was the first to prepare this sulphur compound, I find that B. Hofmann had prepared it in 1879 and in 1887 by oxidising ortho-amino-phenyl-mercaptan with ferric chloride. K. Hofmann, the son of the former, in 1894 also prepared the same body by heating aniline with sulphur. Both father and son were working on the thio-anilines at the time, and neither prepared the substance for any therapeutic purpose. The same thing happened to Ehrlich, as the compound from which "606" was synthetised was isolated by Béchamp in 1863.

Intramine is a pale yellow crystalline body, insoluble in water, but soluble in ether, alcohol, and acetone. It is best put up as an emulsion in olive oil, in which it is suitable for intramuscular administration. A lecithin adsorption compound of intramine can be prepared for intravenous administration. Ehrlich found that the *dosis tolerata* of salvarsan for rabbits was 0·1 grm. per kilo. Therefore, when I say that several times that amount of intramine can be injected into a rabbit weighing only 85 grm. it will be clear that intramine is an absolutely non-toxic substance. The biggest single dose I have given to a human being is 12 grm. without any untoward symptoms arising; 3 grm. can be injected every third day with impunity. When compared with salvarsan, I found that in the primary and generalisation stages salvarsan was superior to intramine, but that in the recurrent stages the opposite was the case.

If my theories on oxidation and reduction are correct the above is only what one would expect, as in some of my previous work I showed that oxidation was more to the fore than reduction in early syphilis, and that the reverse was the case in late syphilis. Moreover, if correct, then it would be expected that, if an oxidising agent was used in early syphilis first, the action of a subsequently administered reducing agent would be enhanced. This is exactly what happens. If in early syphilis a metallic compound is first injected and then intramine, the symptoms vanish very much more rapidly than if subsequent injections of only the former had been prescribed. To cite a case.

A man came to see me on a Monday with a chancre on the corona, which was slightly ulcerated and very indurated. An intravenous injection of galyl (40 cgrm.) was given and an intramuscular injection of intramine (2 grm.) made three days later, by which time no change had taken place in the sore. On the following Monday the sore and induration had completely vanished.

Severe papular syphilides which are often so resistant to the arsenical compounds can be made to vanish in a week if a dose or two of galyl is followed by one of intramine. In the recurrent stages, especially in gummata, the action of intramine is so rapid that, as a rule, the gummata have healed before an injection of a metallic compound would have been given.

I gave an out-patient one Saturday, who was suffering from gummata, which surrounded the corona, affected the whole of the under surface of the penis, and extended on to the scrotum, an intramuscular injection of intramine (3 grm.). By the following Saturday every lesion had healed.

When I came to realise that metals acted as oxidising agents and non-metals as reducing agents, I tried other metallic compounds to see if they would take the place of the arsenical products. As a result of several experiments I found that certain colloidal compounds of iron and aluminium—namely, their hydroxides, which I had converted into emulsoids with glycine, gelatin, or albumin—when injected intravenously acted tolerably well in early syphilis, and they also had the effect of increasing the action of intramine. Colloidal iron and aluminium compounds have a very great advantage over the arsenical drugs, as they are non-toxic, but to obtain an action equal to, or superior to that of, salvarsan it will be necessary to prepare more strongly adsorbed compounds than the hydroxides. Such compounds, I am glad to say, I have been able to prepare, but the dosage and the best method of administering them has yet to be determined.

I have treated over 80 cases with intramine, and the results, provided the rules suggested are adhered to—namely, salvarsan first and then intramine in early syphilis, and vice versa in late syphilis—are very much better than even the best of those obtained with salvarsan when it first came out. Several cases have healed at once with one injection, when they remained practically uninfluenced by an arsenic preparation and subsequent treatment with mercury and iodides. The pain caused by the intramuscular injections varies in different individuals, and is sometimes considerable, but it quickly passes off, and the swelling caused soon becomes absorbed. On the second and third days after the injection a rise of temperature to, in bad cases, as much as 103° F., is sometimes witnessed, but beyond this I have never noticed a toxic symptom.

Space forbids my going further into the subject of chemotherapy here, and, furthermore, it is to be the main theme of my Hunterian lectures in March. Nevertheless, I have said sufficient to show that my previous statement, to the effect that arsenic was not necessary, is correct, and when I state that intramine is more active in destroying the very phases of the leucocytozoon syphilidis which salvarsan does not, and vice versa, I think I am justified in saying that the last link of my syphilitic chain confirms the correctness of those forged before.

I wish to thank Mr. J. Ernest Lane, who has been so kind in giving me facilities for in-patient work at the London Lock Hospital, Mr. J. Patterson, for the great assistance he has rendered me in the chemical part, Dr. H. Spence in the clinical part, and the British Drug Houses, Limited, for the help given and interest taken in the work.

Wimpole-street, W.

THE SIMPSON LIGHT IN THE TREATMENT OF VENEREAL LESIONS.

BY E. G. FFRENCH, M.D. EDIN., F.R.C.S. EDIN.,
MAJOR, R.A.M.C.; OFFICER COMMANDING MILITARY HOSPITAL, ROCHESTER-ROW, S.W.

THE Simpson light is the latest discovery in therapeutics, a discovery in which both the medical faculty and laity are evincing a great amount of interest. For over two and a half years the scientific investigations have been in progress, during one and a half years these "S" rays have been employed therapeutically and over 9000 treatments have been given. It will therefore be admitted that no undue haste has been shown in now introducing them to the more general notice of the profession.

The interesting history of the discovery of these rays is now known to most medical men. During the past six months I have made frequent observations of the work done at 100, Victoria-street, London, S.W., and elsewhere, and have treated some 40 selected cases from the Military Hospital, Rochester-row, S.W., suffering from venereal lesions.

The Application of the Rays.

The apparatus consists of a stand and carrier for a pair of metallic electrodes, these latter being composed mainly of wolfram prepared by a very elaborate and expensive process. The arc is, as a rule, generated by an electric current of 40 to 50 volts and 5 to 8 ampères, but modifications in the composition of the electrodes and the current used are being constantly tried. The rays generated from the glowing electrodes are allowed to impinge directly upon the area to be treated for a period of 1 to 5 minutes at a distance of 10 to 18 inches. In certain conditions it has been found desirable to concentrate the emanation and the limited amount of accompanying heat rays by means of a parabolic reflector either of quartz or, better, of polished metal. The rays so concentrated are termed "focal rays" as opposed to the former, the "open arc."

The method of employing the apparatus in treatment of patients is as follows. (*a*) The "open arc," with 40 to 50 volts and 5 to 8 ampères. This is placed within from 10 to 18 inches from the area to be treated, and exposed from 1 to 5 minutes. (*b*) The "focal rays."

In every first application a moderate treatment should be given with instructions to the patient to make a careful note of the effect produced. No dressings should be applied to wounds or sores, and if a scab is formed boric fomentations should be applied over-night—i.e., before the next treatment. The best means of protecting the lesions is by means of a fine-mesh wire covering shaped so as not to touch the sores.

The reaction varies considerably. In some cases the patient feels a slight tingling in or near the area treated which may last from one to five hours. The reaction may be ascertained by a close observation of the area treated, as in the case of syphilitic ulcers, pink and dark-coloured spots can be observed, and frequently the skin is coloured slightly brown for a few days.

Care must be taken to protect the eyes both of the patient and of the operator. Blue lead glasses should be worn. It is also desirable as far as possible to avoid giving the patient treatment until the reaction of the former treatment has passed away, because if the treatment is given too frequently the area may become inflamed and the improvement retarded. If any discomfort is produced the application of almond or olive oil will alleviate it. Patients should be cautioned not to apply severe friction to the skin (such as rubbing with coarse towels) for at least 24 hours after treatment.

The operator's body is screened from the source of light by the interposition of a metallic plate, and his eyes from reflected rays by the use of blue lead spectacles such as are worn by furnace workers. The intensity of the light is such that marked conjunctival swelling may be caused to the operator if he unduly exposes himself. The same may be occasioned to the patient, though to a much less degree, as the period of exposure is necessarily shorter. The patient's eyes are therefore protected by pads of black cotton-wool and a bandage; a very thin layer of clothing suffices to protect the rest of the body.

Effect of the Light upon Diseased Tissues.

The first effect noticed in the case of ulcers, especially when the focal rays are employed, is the almost immediate discharge of plasma and pus. Subsequently the exudate natural to the condition tends to diminish, the tissues take on a more healthy appearance, and regeneration soon occurs. After a very few treatments the ulcers begin to assume a totally different appearance. Healing may begin at the margins or at the centre. Ordinary scar tissue never seems to form. Several other conditions have been successfully treated with the Simpson light—namely, rodent ulcers, lupus, acne, sycosis, herpes, ringworm, alopecia, localised eczema, &c. I have personally seen at the institute some excellent results in rodent ulcers.

As only a limited number of my patients from Rochester-row could be conveniently treated at the institute, I selected specially severe cases to test this treatment. Some 8 cases of primary, 12 of secondary, 4 of tertiary, 10 of soft chancre, and 6 of bubo in the inguinal glands, 1 case of balanitis, and 1 of impetigo contagiosa of the face. All syphilitic cases received the usual syphilitic remedies in addition during this treatment, and I have come to the conclusion that the Simpson light has helped considerably to cut short their stay in hospital by several days. Local treatment to the parts was suspended, and a wire mesh protector was employed in each case. Improvement was noticed very often after the first application, and the average number of applications for a primary sore was eight. The secondary lesions also made very rapid progress, and this was especially noticeable in cases of condylomata. Of the tertiary cases there were two intractable ones of gummata of the leg. These patients had a good deal of antisyphilitic treatment for several months without any appreciable improvement. It was, however, noticeable that when the rays were applied improvement set in at once, and both these cases were discharged practically cured. One had as many as 59 treatments and the other 28. I consider this satisfactory, as it is well known amongst syphilologists that tertiary ulcers do not always react well to salvarsan. It is of interest to note that the scar-tissue in both these cases was different from the ordinary scar-tissue after syphilitic ulcers. In other words, it had a much healthier look. Suppurating glands in the inguinal region are often difficult to cure, but the

Simpson light has proved of great benefit in these cases. Several patients who came under treatment were suffering from deep-seated suppuration of these glands, which required a good deal of packing. When they were put under treatment all packing was removed and the rays were applied to the affected parts. They were afterwards protected by wire meshing, and all of them without exception healed rapidly, the average treatment being about nine applications. Soft chancres have also healed rapidly, and destructive lesions of a phagedænic nature have been arrested and healed without any marked deformity.

Notes on a Few of the Cases Treated.

CASE 1.—Private —— was admitted to the Military Hospital, Rochester-row, suffering from several gummatous ulcers on the right leg, covering an area of about 5 inches square. He was given injections of salvarsan, kharsivan, hectine, and mercury and potassium iodide by the mouth. He made little or no improvement, although he had been in hospital for many weeks. On the application of the Simpson light he made immediate progress, and this steadily continued until he was discharged practically cured. During that time he had 28 treatments. Some of the ulcers were $\frac{3}{8}$ in. deep. Scar-tissue sound and healthy-looking.

CASE 2.—Private —— was admitted to hospital suffering from tertiary ulcer on the right leg, measuring 4 in. × 2 in. × $\frac{1}{4}$ in. After 59 treatments the ulcer had almost completely healed. Scar-tissue very good.

CASE 3.—Private —— was admitted to hospital suffering from a large phagedænic ulcer on the dorsal surface of the body of the penis measuring 2$\frac{1}{4}$ in. × 1$\frac{1}{4}$ in. × $\frac{3}{8}$ in. He was discharged from hospital quite healed without any cicatricial contraction after 16 applications.

CASE 4.—Private —— was admitted to hospital suffering from soft chancre and suppurating glands of the inguinal region. The ulcer in the groin was 1$\frac{1}{2}$ in. × $\frac{1}{2}$ in. × $\frac{1}{4}$ in. After 14 applications his lesions completely healed.

CASE 5.—Driver —— was admitted to hospital suffering from syphilis. The size of the sore on the corona was 1$\frac{1}{4}$ in. × 1$\frac{1}{4}$ in. This completely healed after 12 treatments.

CASE 6.—Private —— was admitted suffering from soft chancre at the base of the penis, the sore measuring 1$\frac{1}{2}$ in. × 1$\frac{1}{4}$ in. This completely healed after 14 treatments.

CASE 7.—Private —— was admitted suffering from a large sore on the right buttock 2$\frac{1}{2}$ in. × 1$\frac{1}{2}$ in. × $\frac{1}{4}$ in. S. pallida was discovered. Patient first had syphilis in 1910. This large ulcerated mass completely healed after 11 treatments, leaving a most satisfactory cicatrix.

CASE 8.—Private —— was admitted to hospital suffering from a phagedænic ulcer extending two-thirds of the way round the body of the penis, and extending from the base of the penis to within $\frac{1}{4}$ in. of the corona. The S. pallida was demonstrated in this case. This extensive ulceration completely healed without any cicatricial contraction after 17 treatments. The depth in its centre was $\frac{3}{8}$ in.

CASE 9.—Private —— was admitted suffering from soft sore of a phagedænic nature, situated at the junction of the body of the penis and the scrotum measuring 1 in. × 1$\frac{1}{2}$ in. This healed satisfactorily after 11 treatments.

CASE 10.—Private —— was admitted to hospital suffering from a sore which was apparently soft in character (but from which the S. pallida was afterwards demonstrated) situated at the base of the penis and measuring 1 in. × 1 in. This healed satisfactorily after 10 treatments.

From an extended experience of this treatment for venereal lesions I have come to the conclusion that the best results are obtained by giving a treatment three times a week (every other day) with an exposure of two minutes' duration, and varying the treatment with the open and focal rays from time to time according to the condition of the lesion. By following the above method it is now a rare thing for any of the patients to get a marked reaction.

INFLUENCE OF FEBRILE CONDITIONS ON INOCULATION AGGLUTININS.[1]

BY H. L. TIDY, M.D. OXON., M.R.C.P. LOND.,
PATHOLOGIST TO THE BRITISH RED CROSS HOSPITAL, NETLEY; TEMPORARY CAPTAIN, R.A.M.C.

SOME agglutination reactions performed for diagnostic purposes at the British Red Cross Hospital, Netley, suggested that pyrexia or pyrexial conditions lead to the removal from the serum of agglutinins due to inoculation. The microscopic method was used throughout. The cases quoted are consecutive, with the omission of those which had been inoculated more than one year previously or not at all. Of 14 cases with a positive agglutination reaction to B. paratyphosus (B) and with the bacillus present in the stools, 8 gave no reaction with B. typhosus in the early stages. Only 3 gave more than slight agglutination. The mean interval since inoculation was seven months both for the 8 and the 14 cases. Of 9 cases of septic origin with temperature of over 103° F. 6 gave no reaction to B. typhosus in dilutions of serum 1 to 20; of the remaining 3, 2 were cases of erysipelas examined on the first morning of pyrexia. The mean interval since inoculation was six months. Similarly a deficiency of agglutinins was found in other febrile conditions. For comparison reference may be made to a series of agglutination reactions performed some months previously on a number of patients with slight flesh and other wounds. Considering those who had been inoculated not more than seven months, it is found that practically 100 per cent. gave at least a distinct trace of agglutination in dilution of serum 1 to 50. Of the febrile cases quoted which had been inoculated not more than seven months, a similar amount of agglutination was present only in 16 per cent. Thus there is evidence that marked pyrexia, perhaps 102° F. for five days, is associated with diminution or complete disappearance of the agglutinins resulting from inoculation. Such effect is not invariable, nor probably is it due directly to the temperature of the blood.

Slighter degrees of pyrexia also appear to have a proportional effect on the inoculation agglutinins. As an instance of this the control cases referred to may be placed in three classes according to their reaction in dilution of serum 1 to 50: (1) complete agglutination; (2) partial agglutination; (3) trace of agglutination. The mean interval since inoculation was 5·6, 5·8, and 5·9 months respectively, and the mean number of doses was identical. A measure of the severity of these cases is given by the interval between the date of wound and discharge from hospital. This is approximately 5, 9, and 12 weeks. Hence, even in mild cases the amount of agglutinins present shows an inverse ratio to the severity of the wound. This factor, therefore, must be taken into consideration in statistics dealing with the amount of agglutinins compared to the interval since inoculation.

Do the agglutinins return after subsidence of the pyrexia?—Cases have been examined where the agglutinins were absent subsequently at long intervals. In a case of sepsis the agglutinins apparently returned temporarily. In a case of malaria the agglutinins increased after cessation of the rigors. In one patient who had passed through prolonged and severe pyrexia for many

[1] Being a preliminary note on a report to the Medical Research Committee.

weeks marked agglutinating power was present, but the serum had not been examined previously.

Are the agglutinating bodies absent from the blood?—Possibly they are present as agglutinoids, and as such may account for some of the vagaries of agglutination which occur in inoculated persons with typhoid and paratyphoid infections.

If the views expressed here are correct, certain deductions follow:—

1. *Diagnosis of enteric fever in inoculated persons.*—When an inoculated man develops a B. typhosus infection his serum will pass through the following stages: (1) Presence of inoculation agglutinins (perhaps to the fourth day); (2) agglutinins absent (about fifth day); (3) presence of infection agglutinins. These stages may or may not overlap, producing the variations of agglutination frequently occurring. Possibly agglutinoids may complicate the third stage further. But in any case the result is that after the fifth day of marked pyrexia a positive agglutination reaction to B. typhosus is a proof of typhoid fever as reliable for inoculated as for uninoculated persons. When an inoculated man develops a paratyphoid infection the third stages may be represented to some degree by group agglutinins.

2. *Immunity to typhoid fever.*—Although agglutinins and immune bodies are independent, it is probable that in a mass of individuals immunity and agglutinating power run approximately parallel. If this is so, it is possible that immunity due to inoculation is diminished by any febrile condition, whether septic, paratyphoid, or of any other nature.

Conclusions.

Inoculation agglutinins are diminished or entirely removed by febrile conditions. It is possible that they are converted into agglutinoids.

In certain cases they may return, but usually do not do so.

A positive agglutination reaction to B. typhosus after the fifth day of pyrexia has the same value in an inoculated as in an uninoculated person.

Immunity conferred by inoculation may be affected at the same time as the inoculation agglutinins.

Devonshire-place, W.

A FATAL CASE OF ANTHRAX:

INFECTION BY A SHAVING BRUSH.

BY E. H. SNELL, M.D. LOND.,
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With Clinical Notes by

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THE following notes have been supplied by Mr. E. W. G. Masterman:—

The patient, aged 34, a worker in the wooden parts of aeroplanes, was admitted to the Coventry and Warwickshire Hospital on Dec. 6th, 1915, at 12.30 P.M. with what appeared at first to be an acute septic infection of the skin. He walked into the hospital, and although looking very ill did not appear to be at all apprehensive of his condition. He stated that he was in his usual health up to Dec. 3rd, when he inadvertently irritated a small pimple on his neck by picking at it. Swelling and redness had appeared around the sore, which had continued to increase and spread. The patient had considerable, almost symmetrical, œdema on both sides of the lower jaw and upper neck. Here there was not much redness, but there was a large patch of erythema, with slight œdema, covering the whole of the front of the chest. This patch had rather ill-defined edges. Over the anterior edge of the left sterno-mastoid, about 1¼ inches below the level of the angle of the jaw, was a small yellowish pustule (about ½ or ¼ of an inch) with a black necrotic centre and an area of inflammation around it. There were no vesicles round this nor any induration (it was not at all like the "typical" malignant pustule). The temperature on admission was 98° F., pulse 92, and respiration 20. He was quite conscious. At 6.30 P.M. the patient somewhat suddenly collapsed; he perspired freely, the pulse became imperceptible at the wrist and his extremities became cold. Despite all efforts he remained in much the same condition, although mentally he was conscious and confident that he would be all right the next day. During the evening I excised the pustule for examination, a small operation which he did not seem to feel much. About midnight he gradually lapsed into coma and died at 1.30 A.M., just 13 hours after admission.

Smears of the blood from around the pustule showed many anthrax bacilli, some of which were abnormally swollen. Cultures from this blood upon a sloped agar tube yielded colonies of staphylococcus albus and bacillus anthracis. From these latter subcultures have been made. After death the spleen was removed and smears of the spleen pulp showed abundant bacillus anthracis.

The excised pustule, which I forwarded to the Clinical Research Association, is thus reported on by the Director: "This is an inflammatory lesion of the skin and subcutaneous tissue showing vesicles and dense leucocytic infiltration. Large Gram-positive bacilli are found in it in large numbers; these organisms are indistinguishable from anthrax bacilli. We have no doubt that the lesion is due to the bacillus anthracis."

The man had been employed as a wood turner in the flying machine department of a local factory. He had at no time been occupied with the painting of the aeroplanes. Careful inquiries failed to elicit any connexion between the illness and his occupation or his home surroundings.

The case having been notified to the Home Office, that office communicated with the Local Government Board, it appearing to them unlikely that there was any association between the illness and the man's occupation. I then learnt from Dr. F. J. H. Coutts, of the Local Government Board, writing for Dr. A. Newsholme, that some cases of malignant pustule had occurred last year which had been traced to shaving brushes. (These cases were subsequently recorded in THE LANCET of Jan. 1st, 1916, by Dr. Reginald R. Elworthy.) Inquiries were therefore made along this new line. The pustule was situated just below the angle of the left lower jaw, and therefore within the shaving area. Inquiries at the house where the man lodged elicited the following information. A co-lodger, a friend of the patient, stated that until quite recently, while he has been in Coventry, the patient used to go to a barber to get shaved; the friend chaffed him about this and with some others purchased for him a present in the form of a safety razor. The deceased purchased a shaving brush from a local firm of leather merchants. This shop was visited and it was ascertained that they had in stock about half a gross of the same make of shaving brush, which were purchased in October last from a firm trading in London and Birmingham. Half a dozen of these shaving brushes, together with that of the deceased, were then obtained and forwarded to the laboratory of the Local Government Board. The shaving brush of the deceased was found to contain anthrax spores. Four of the other brushes were examined, with negative results. The source of infection was therefore not clear, as the shaving brush used conceivably might have been infected from the skin.

Seven further brushes were thereupon obtained from the remaining brushes, one being taken from separate boxes each containing six. In the end it was found that at least two of these seven brushes contained virulent anthrax spores. The whole of the remaining shaving brushes were thereupon purchased with a view to their being destroyed.

Coventry.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

DETACHMENT OF THE RETINA.

BY CHARLES HIGGENS, F.R.C.S. ENG.,
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THE following two cases have been under my care.

CASE 1.—Sergeant, aged 24; admitted May 9th, 1915. A few days before a shell had burst near him and knocked a large quantity of dirt into his face. He was wounded in the buttock at the same time, but no serious injury was done. Soon after he found that he could not see with his right eye. Ophthalmoscopic examination showed a large detachment of the retina. Vision: He could distinguish large objects, but no details. June 20th: Galvano-puncture between the external and inferior recti posterior to the equator of the globe. A considerable gush of fluid occurred as soon as the puncture was made, and more followed the withdrawal of the cautery. On July 15th the retina appeared to be in quite normal position; field to fingers normal. Vision, J. 20 at 1 ft. July 20th and 29th: Vision, J. 19 at 1 ft. On the 29th there was some floating vitreous opacity; no sign of detachment; field normal.

CASE 2.—Sapper, aged 39; admitted Oct. 6th, 1915. A few days before he had been struck by a piece of shrapnel on the lower lid of the right eye. There was a small tear on the eyelid; vitreous full of blood; no details of fundus. Nov. 18th: Blood had cleared away, leaving visible a large detachment of the retina in the outer and lower part. The inner and upper part of the field was wanting. Nov. 25th: Galvano-puncture between the external and inferior recti behind the equator. A considerable amount of fluid escaped. Nov. 30th: The field was full. The retina had returned to its normal position. Vision, J. 29 at 1 ft.

Remarks.—The operation performed in these two cases is that recommended by Mr. Leslie Paton, and is certainly the most satisfactory I have ever tried, for in some 40 years of practice, during which I have done every operation that has ever been described and some which have not, I have never seen the smallest good result from any one. The result of Mr. Paton's operation, though it leaves much to be desired, is, as far as my experience goes, much more hopeful. In my two cases the improvement was from a useless eye to sight sufficient to enable the patient to find his way about, which is something very considerable. They were cases in which the most favourable result might be expected, for in both displacement was caused by direct injury, in healthy eyes, and was recent.

Brook-street, W.

THROMBOSIS OF THE CEREBRAL ARTERIES IN PARATYPHOID B.

BY WILLIAM MACADAM, M.D., B.SC. GLASG., D.P.H. CAMB.,
TEMPORARY HONORARY LIEUTENANT, R.A.M.C.; PATHOLOGIST, WELSH HOSPITAL, NETLEY.

IN view of the fact that paratyphoid B is generally held to be a much milder infection than typhoid, and of the rarity of thrombosis of the cerebral arteries as a complication of the latter disease, the following case, with post-mortem and bacteriological notes, has been thought worthy of record.

The patient, aged 25, a corporal in an Australian unit, was admitted into hospital from Gallipoli on Sept. 26th, 1915, in a semi-comatose condition, while he showed all the signs and symptoms of the "typhoid state." No history could be obtained from the man, but some scanty notes accompanying the patient indicated that the cerebral symptoms had been of at least six days' duration, while the temperature on hospital ship had ranged between 102° and 104° F.

Examination on admission showed the patient to be suffering from complete right-sided hemiplegia and right facial paralysis. The limbs were quite limp and flaccid, with complete absence of reflexes; Babinski negative. There was incontinence of urine and fæces. The spleen showed considerable enlargement, extending to a hand's breadth below the costal margin. No paralytic signs were observed on the left side. Coma gradually deepened, the patient dying two days after admission.

Necropsy.—Post-mortem examination of the brain revealed the following. The dura mater was markedly adherent over the calvarium, while its vessels were unduly congested. No thrombi were found in the cerebral sinuses, although some loose attenuated clots were present. The leptomeninges appeared normal. The left cerebral hemisphere showed slight flattening, but there was no marked œdema. Examination of the vessels at the base of the brain revealed the presence of thrombosis at the upper end of the left internal carotid artery extending into the middle meningeal artery, and its lenticulo-optic and lenticulo-striate branches. This was well seen as they passed into the anterior perforated space, and was continued into the external segment of the lenticular nucleus, where the arteries became whitish in colour and somewhat attenuated in size. An area of cerebral softening, of reddish-white colour and of the size of a pigeon's egg, involved the internal capsule and lenticular nucleus. On the right side the junction of the internal carotid and middle meningeal arteries was normal, as was also the first part of the latter vessel from which the perforating branches arise, but beyond this, and especially in the cortical branches, thrombosis was present. No softening or other abnormal character of the cerebral tissue was detected in the right hemisphere.

The spleen was about four times its normal size, there being a large swelling at either pole with a relatively constricted part in the middle. Those swellings were due to large hæmorrhagic infarcts and showed signs of purulent softening. The wall of the small intestine showed considerable congestion, the hyperæmia becoming more marked in the lower part of the ileum. Ulceration was slight and was confined to the Peyer's patches of the lowest 3 feet of the ileum. Except for hyperæmia of the mucous membrane of the cæcum the great intestine appeared normal. The mesenteric glands were considerably enlarged and hyperæmic. Thus the general toxæmia was altogether a more marked feature than the local lesion.

The nature of the infection was confirmed bacteriologically at the necropsy by the isolation in pure culture from the spleen of a Gram-negative bacillus with all the cultural and agglutinating characters of B. paratyphosus B.

I desire to express my indebtedness to my commanding officer, Lieutenant-Colonel A. W. Sheen, for his permission to publish the records of the above case.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Discussion on Gunshot Wounds of the Chest.

A MEETING of this society was held on Jan. 17th, Lieutenant-Colonel WILLIAM PASTEUR, R.A.M.C. (T.), the President, being in the chair.

Colonel Sir JOHN ROSE BRADFORD, A.M.S., opened a discussion on Gunshot Wounds of the Chest by dealing with the subject from the point of view of the physician. This address appears in full on p. 227.

Captain HERBERT G. M. HENRY spoke on the pathology and bacteriology based on a study of gunshot wounds of the chest at a base hospital. He had made post-mortem examinations in 100 cases, as well as routine laboratory examinations of the fluids removed, and experiments upon animals. In 6 of the fatal cases death was due to injury to the vertebræ and spinal cord only. Of the remaining 94, 78 had hæmothorax and 16 had not. In only 8 at most of the cases with hæmothorax was death due to simple bleeding; the remaining 70 were complicated in 26 cases by damage to viscera, and in 44 by sepsis. Captain Henry then described the typical post-mortem appearances of fatal cases of hæmothorax. Primary coagulation of the effused blood and a deposition of fibrin occurred in a few hours, followed by exudation, which induced a secondary clotting. The lung submerged in the extravasated blood collapsed; the stages of this collapse were more rapid and its degree more complete than occurred in pleural effusion. The unsubmerged part of the lung was voluminous from the high degree of emphysema which affected it. The line of demarcation between the hæmothorax below and the emphysema above varied greatly in obliquity. In septic hæmothorax the pleura and lung became covered by a secondary deposit of fibrin, which might spread throughout the pool of blood. In anaerobic infection the hæmothorax often had a foul smell, but this was not constant. The naked-eye appearance of the fluid was no guide to the presence of sepsis, nor was the nature of the cellular constituents. Anaerobic organisms and streptococci accounted for the great majority of infections.

Captain H. MORRISTON DAVIES followed with a paper, which we report in full on p. 232.

The discussion being opened,

Lieutenant-Colonel W. HALE WHITE said that in his experience if the patients were well enough to come over to England they usually progressed favourably. He had seen some 50 cases, none of which ended fatally.[1] There was a large number of cases of bullet wounds of the chest where the patients suffered little from their effects. The dyspnœa seen in many cases was very interesting and was altogether out of proportion to the physical signs. He thought that in some cases it was at least partly "functional" in origin. Hæmoptysis was an uncommon symptom of the condition as seen in this country. It had not recurred except in one case. A point which had impressed him was that after the fluid had been aspirated in hæmothorax the heart did not return to its normal position. It was difficult to give an opinion as to when aspiration should be performed; he thought that certainly every case in which the fluid amounted to over 20 ounces should be so treated. A point which was often forgotten was that the chief trouble was connected with the collapsed lung, and the patient was not instructed as to the manner by which it should be re-expanded. It was a matter for question whether this should be by breathing exercises or by short walks uphill.

Dr. R. MURRAY LESLIE pointed out that a great advance had been made as to the attitude which was adopted towards aspiration in hæmothorax. It was very different from that which was in vogue during the South African war. He endorsed Colonel Hale White's remarks as to the importance of breathing exercises or walking uphill to re-expand the lungs.

Mr. CORTLANDT MACMAHON described the exercises which are suitable for such cases.[2] The main features of the treatment were (1) to prevent pleural adhesions forming and to break down existing adhesions by careful and gradual movements; (2) to enable lungs which have collapsed to regain their normal condition; (3) to reduce hæmothorax and pneumothorax; (4) to restore the normal shape of the chest walls which have fallen in owing to collapse of the lungs; (5) to assist the discharge of pus by increasing lung inflation; and (6) to improve the general condition by the tonic effects of the exercises, and especially to overcome breathlessness on exertion. The procedure on which he laid greatest stress was that the body should be bent laterally away from the side of the injured lung; the uninjured lung being thereby partially collapsed, the lung on the injured side was made to inflate more definitely. To help this inflation a pressure of 30 lb., increased to 60 lb., was put upon the uninjured side by the operator's hands, and the abdomen made to contract with the breath held.

Dr. F. J. POYNTON referred to cases of wounds of the chest with perhaps some fever, the cause of the illness being obscure. He spoke of the importance of not being in a hurry in such cases to resort to surgical treatment. Caution was an important factor in the treatment of such chronic cases, which often cleared up with a little patience.

Sir JOHN ROSE BRADFORD, Captain HENRY, and Captain MORRISTON DAVIES replied.

[1] THE LANCET, Dec. 4th, 1915, p. 1233.
[2] THE LANCET, Oct. 2nd, 1915, p. 769.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

A New Commutator "Break."—Simpson Light.

A MEETING of this section was held on Jan. 21st, Dr. W. IRONSIDE BRUCE, the President, being in the chair.

Sir JAMES MACKENZIE DAVIDSON described and successfully demonstrated a new commutator "break" for utilising the current at "make" as well as the current at "break." He said that in these days, when heavy currents were being used necessitating the employment of powerful tubes, the inverse current which formerly was not strong enough to cause much inconvenience had become a serious matter; it not only spoilt the tube, it also interfered with the working, and was, no doubt, also prejudicial to the screen effects. The valve tubes represented an attempt to deal with the difficulty, and Dr. Reginald Morton and Mr. Leslie Miller devised different forms of apparatus which were calculated to stop the inverse current. Sir James Mackenzie Davidson thought, however, it would be much better to try to prevent the inverse current being produced, and the present invention was the outcome of that desire. It brought about, by the employment of a rotary dipper break operating in mercury, a condition of no resistance at "break," so that no "make" current was produced. He said that arrangements were being made to produce the apparatus on a large scale, which would allow from 50 to 100 ampères to go through. The difficulty would then be that of securing tubes to stand such a strength. He also showed a new localising couch.—The PRESIDENT pointed out what a boon was conferred on radiologists by the provision of an apparatus which would dispense with valve tubes and produce a unidirectional current.—The ensuing discussion was taken part in by Mr. C. R. C. LYSTER, Dr. F. HERNAMAN-JOHNSON, and Dr. G. B. BATTEN, and Sir JAMES MACKENZIE DAVIDSON replied.

Dr. E. P. CUMBERBATCH read a paper on the Use of the Simpson Light, with a Description of the Apparatus.[1] After recounting the steps which culminated in the establishment of the apparatus as a therapeutic agent, he said that prolonged application of the light on healthy skin resulted in an intense erythema, perhaps followed by desquamation. Some complained of intense itching after the application, though that had not been his experience. The eyes should be protected during the use of the lamp, otherwise an intense conjunctivitis would ensue. The operator should use protective glasses made of lead, tinted blue. The rays exerted very little penetrative effect, hence the lesions which it benefited most were superficial ones. Still, in some instances they seemed to have been responsible for good results in deeper lesions. At St. Bartholomew's Hospital the best results obtained by the light were in rodent ulcer, some of the cases having been very advanced. Extensive ulcerations of the lips, tongue, epiglottis, and larynx were also greatly improved by the rays; and the same

[1] THE LANCET, Jan. 8th, 1916, p. 76.

applied to stubborn chronic eczema and chronic ulcerations of the skin. The Simpson lamp was a very intense source of ultra-violet light, and had a strong actinic effect. He advised caution in publishing results, and thought those who used it should have had some experience of ultra-violet therapy.

Dr. SIDNEY RUSS gave an account of the physical properties of the Simpson light, based upon his own investigations, which he illustrated by projecting various spectra by means of the epidiascope. He worked by interposing varying thicknesses of human skin between the source of light and the slit of the spectrograph, and for varying lengths of exposure.

Dr. J. H. SEQUEIRA read a communication embodying his own experience with the Simpson light, and experiments with it on his own person. The light was very rich in actinic rays, which had a destructive effect on bacteria, and beneficially influenced superficial bacterial affections. But it was not a new kind of ray, and it had nothing in common with the X ray, nor did it merit a special name, seeing it was but an extension of the Finsen principle.

Dr. A. MACGREGOR, who assisted Dr. Cumberbatch at St. Bartholomew's Hospital, confirmed that gentleman's remarks, and gave particulars of various kinds of cases which had been successfully treated.

The discussion was continued by the PRESIDENT, Dr. N. S. FINZI, Dr. L. W. BATHURST, and Mr. LYSTER, and Dr. RUSS and Dr. CUMBERBATCH replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Exhibition of Cases.—Malignant Disease of the Stomach.

A MEETING of this section was held on Dec. 10th, 1915, Sir J. W. MOORE being in the chair.

Dr. A. R. PARSONS showed two cases of Myelogenous Leukæmia, both in men of about 35 years of age. One had received prolonged treatment with benzol, having consumed about 1½ quarts of the drug in the previous 18 months. The case was most disappointing in that no result was apparent except a gradual progress of the disease, the white cells considerably increasing in number and the spleen becoming larger. Dr. Parsons said that this was in accordance with his experience of previous cases, in which he had seen merely a temporary improvement. He regarded benzol as useless in the treatment of this disease, and the case was now having a course of X rays. He noted that both these patients were passing a normal amount of uric acid. Previous cases had given a similer estimation, and he questioned the accuracy of the statement that the uric acid output is increased in myelogenous leukæmia.

Mr. W. I. DE C. WHEELER exhibited a case of abdominal aneurysm in a man on whom he had operated 5 years ago. Operation consisted in wiring by Colt's method. The man had worked hard since, and was free from symptoms. A pulsating mass could still be felt, but pulsation was not expansile and the bruit had disappeared.—Dr. HAYES, who had X rayed the case on several occasions, said that expansile pulsation had entirely disappeared at the last examination some time previously, and that the shadow had become much denser, indicating consolidation of the clot.

Dr. O'BRIEN showed: 1. A man 68 years of age who had suffered from rodent ulcer on the right ala nasi for 16 years. He was treated with radium bromide—29 exposures, extending over 3⅓ months, varying from 15 minutes to 3 hours—causing complete healing of the ulcer, with a sound, pliable cicatrix. 2. A woman aged 35 years with a similar condition of three years' standing. This case was also cured by radium bromide after 14 exposures. Histological examination had been made in the first case and proved positive. He had not done so in the other case in order to avoid deformity as far as possible. 3. A case of Psoriasis in a child 2½ years of age, whose mother and grandmother had suffered from the same disease. He emphasised the rarity of psoriasis before the age of five years, and also the distinct heredity. The eruption, which was dry, scaly, and papular, involved the knees, elbows, arms, legs, and the backs of the hands. The chest and scalp were quite free.—Dr. WALTER SMITH thought that a number of these cases were really seborrhœic eczema, and the appearance of some of the spots in this case inclined to that diagnosis.

Dr. PARSONS, in conjunction with Mr. G. JAMESON JOHNSTON, read a paper on two successful cases of operation for Malignant Disease of the Stomach. The first patient was admitted to hospital nine and a half years ago with signs of pronounced anæmia. A distinct tumour was felt in the epigastrium. Mr. Johnston operated and removed a pyloric growth, which was examined by Dr. J. T. Wigham and pronounced to be carcinoma. The man has since remained in good health. The second patient, aged 63 years, was admitted to hospital two and a half years ago with gastric symptoms. An epigastric tumour was felt. Pylorectomy and gastro-enterostomy were performed, and the growth found to be malignant. He kept well till recently, when he was admitted to hospital with pain and obstinate constipation. Masses could be felt scattered through the abdomen, and a diagnosis of secondary malignant deposits was made. No trace of malignant disease was found post mortem, but a condition of chronic peritonitis, the cause of which was quite obscure.—Dr. T. P. C. KIRKPATRICK commented on the unusual success of these cases where a palpable tumour existed.—Mr. WHEELER said that although the operative mortality in gastric cancer was low, 80 per cent. of the cases in this country recurred, mainly because they were not seen early enough.—Dr. PARSONS added that the diagnosis in these cases was easy on account of the palpable tumour. The glands removed from the lesser curvature were free from secondary deposits. The absence of free hydrochloric acid was a very valuable sign, and though it might be absent in many other types of disease he had found it present in only one genuine case of gastric cancer.

SECTION OF STATE MEDICINE.

Physically Defective Children and the Problem of their Education.—Certification of Insured Persons in Ireland.

A MEETING of this section was held on Jan. 7th, Dr. W. A. WINTER, the President, being in the chair.

The PRESIDENT gave an address on the education of physically defective children, in which he drew attention to the almost complete absence of any attempt to deal with this question in Ireland. He estimated that in Dublin there were probably about 200 physically defective children suitable for attendance at special schools and gave an account of the way in which London looked after the education of these delicate children. He also gave a short account of a residential school for crippled children at Manchester, and mentioned some matters in connexion with open-air schools and children's sanatoriums.—Dr. T. P. C. KIRKPATRICK drew attention to the success of the school held in connexion with the Orthopædic Hospital, Dublin. The teaching of the children there had proved of benefit not only to the education of the children, but also an assistance to their medical treatment.

Dr. R. J. ROWLETTE gave an account of the efforts made in Ireland to secure a method of certification of insured persons which would be satisfactory alike to the medical profession, to the insured person, and to those who had to dispense the benefit.—Dr. MAURICE HAYES pointed out the importance of the principle that none but the medical attendant should be required to certify for his own patients.—Dr. HENNESSY called attention to the great importance of the ethical triumph which the profession has attained in the recent decisions of the Irish Insurance Commissioners.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Jan. 6th, Major A. H. Buck, R.A.M.C. (T.), the President, being in the chair.—Dr. H. M. Galt showed (1) a specimen of Hæmorrhage into the Internal Capsule in a boy aged 14, the result of an accident; and (2) a specimen of Secondary Carcinoma in the Spleen from systemic infection. He pointed out the extreme rarity of this condition. The specimens were discussed by the President and Dr. R. Whittington.—Dr. E. Hobhouse read a paper on Dysentery. After a brief sketch of the history of bacteriological researches in dysentery, he drew attention to the main differences in the two most common forms, amœbic and bacillary dysentery, as regards their seasonal prevalence

and chief symptoms, especially in the earlier stages. Amœbic dysentery, he said, usually runs a chronic course, while bacillary dysentery is an acute disease. In bacillary dysentery the whole of the large bowel is involved in severe cases; in the amœbic form the disease is more scattered, but the gut is involved to a greater depth. Therefore, in the former tenesmus (which is due to involvement of the rectum) is more common, and in the latter hæmorrhage, because the process of ulceration more frequently involves the vessels. Perforation is more common in amœbic dysentery and constitutes a dangerous complication. In the chronic form of the disease thickening of the bowel, sufficient to be palpable to the touch, is very characteristic of the amœbic form, of which also hepatic abscess is practically diagnostic at a later stage. Apart from general considerations, such as rest in bed during the acute stage, a bland unirritating diet, and purgation to get red of the toxic organisms and their toxins, the treatment of the two forms is widely different. After considering the various points in the differential diagnosis of the two forms, Dr. Hobhouse went on to speak of chronic dysentery, and pointed out that the difference between the chronic amœbic and chronic bacillary forms is pathologically this: that the amœbic tends to affect the upper part of the large intestine, the bacillary the lower, and this holds in a large number of cases. He then mentioned the impressions he had formed from 190 cases recently under his care, and suggested that the fact that many of these patients had passed through attacks of typhoid or paratyphoid after their dysentery may have some bearing on the small number of cases which showed dysenteric organisms. Dealing with the treatment of dysentery, he said that ipecacuanha is practically a specific in the amœbic form, whilst of little or no use in the bacillary. In his opinion, the wearing of woollen belts was a most important point in the prevention of relapses. He considered Rogers's method of hypodermic injection of emetine the simplest and most effective for administering this drug, on an average ½ gr. of emetine hydrochloride being injected twice daily for three or four days, and then intermitted according to the symptoms. In the bacillary form the serum treatment is the most important factor. Calomel or castor oil is useful in the early stages thoroughly to clear out the bowel. Sulphates of magnesia or soda given in doses of 1 drachm two-hourly for some hours are advocated by many well-known authorities. Opium in some form is often a necessity to relieve the pain and keep the irritated bowel at rest. The use of sensitised sera has lately been advocated owing to the disappointing, not to say dangerous, results of vaccines.—The President asked if lactic acid had been tried in the treatment of dysentery. He quoted a case of ulcerative colitis followed by general pyæmia in which a pint of whey containing a pure culture of lactic acid bacilli had been administered by injection into the large bowel with apparent success.—Dr. Galt was of the opinion that repeated bacteriological examinations in these cases were useless. The stools in some cases of dysentery contained organisms markedly resembling the Shiga or Flexner bacilli, but which showed different reactions later.—Dr. Whittington thought that only selected cases should be examined bacteriologically. He attached more importance to the presence of blood, mucus, or even loose stools. He mentioned an acute form of bacillary dysentery which occurred in South Africa, in which the whole bowel, not only patches of bowel, was ulcerated. He recorded some of his experiences in the South African War, and suggested that possibly some of the so-called dysentery cases then met with were not bacillary at all but of mechanical origin, due to the presence of particles of sand and other irritant matter in the food. He emphasised the importance of using citrated milk to avoid the formation of curds.—Dr. Donald Hall said that out of 44 of his cases which had been examined four only showed the presence of the Flexner bacillus, and these were negative when again examined the following week. He then quoted some of Sir Ronald Ross's remarks in his recent lecture at the Royal Society of Medicine,[1] emphasising the great value of emetine and saline purgatives and the absence of good results from any form of serum.—Dr. W. Broadbent referred to cases of liver abscess.—Mr. G. Morgan inquired if kidney complications were common, and mentioned some cases in which jaundice occurred.—Dr. Hobhouse, in reply, said that in his opinion patients who had suffered from dysentery were quite unfit to return to tropical climates. In some cases soured milk seemed useful, but the cases under his care were not acute enough for him to form a decided opinion as to the value of this treatment. Bacilli tended to disappear from the stools in three or four weeks in the vast majority of cases. It must, however, be remembered that a single carrier case might give rise to a severe epidemic. He thought the use of emetine of great diagnostic value in doubtful cases. In cases under his observation there had been a trace of albumin in the urine in one or two instances, but nothing approaching an acute nephritis.—A vote of thanks to Dr. Hobhouse was proposed by Dr. R. J. Ryle and seconded by Mr. Morgan.

[1] THE LANCET, Jan. 1st, 1916, p. 1.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held at the Metropolitan Hospital on Jan. 21st, Dr. P. Hamill, the President, being in the chair.—Dr. W. Langdon Brown read a paper on New Methods of Treatment for Diabetes, and in the course of his remarks mentioned the following. Recent improvements in our methods of diagnosing diseases of the ductless glands have not resulted in our finding evidence of such disease in ordinary cases of diabetes. When glycosuria is due to the pancreas, thyroid or pituitary gland, there are usually additional signs due to these glands which are missing in regular diabetes. May it not be that we have taken too narrow a view of diabetes because of one prominent symptom—the presence of sugar in the urine, which can easily be detected? For some years we have known that the fat metabolism may be affected, and we are now realising that the protein metabolism is also disturbed and that the protein intake must be regulated from the first. To this end the intake of nitrogenous food must be greatly reduced at the beginning of treatment. The best plan of all is for the patient to fast entirely for 48 hours and to follow this by two days of von Noorden's vegetable and egg diet. Then protein is cautiously added to this as recommended by Graham. If it is attempted to make good the defective assimilation of carbohydrates by simply increasing the intake of protein and fat, the plan defeats itself by resulting in incomplete oxidation of these foodstuffs with consequent acidosis and its attendant dangers. It is far better to investigate what form and amount of carbohydrates the patient can still assimilate and to combine this with a restricted intake of proteins. On this method patients can gain weight, whereas that had been lost while eating unlimited quantities of meat. It was of the greatest importance, however, to interpolate days of the vegetable and egg diet, and, if necessary, to repeat the 48-hour fast as required.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on Jan. 18th at St. John's Hospital for Diseases of the Skin, Dr. J. L. Bunch, the President, being in the chair.—The President showed: 1. Two cases of Acne Varioloformis, for contrast. The patients were males and were both 32 years of age. In one the lesions were present on the face and forehead, and in the other the hairy region of the scalp was alone affected. Both patients denied having had variola or syphilis. 2. A case of old-standing Lupus Vulgaris, the lesions being present on the left shoulder, leg, and buttock; the patient also had an acute pustular eruption on the hands.—Dr. Morgan Dockrell showed a case of early Adenoma Sebaceum in a Russian subject aged 36. The lesions were present only on the face and were of the usual papular character.—Dr. W. Knowsley Sibley showed: 1. A child aged 3 years with Linear Nævus which had been successfully treated with salicylic acid and creosote 15 per cent. 2. A case of Angio-keratoma in which the lesions had been treated with electrolysis with considerable improvement. 3. A case of old-standing Lupus Vulgaris. The patient had œdema of one leg for two years; there were also some fresh hard nodules present on the upper portion of the foot, which, on microscopical examination, were proved to be tuberculous in character.—Captain C. H. Mills, R.A.M.C., showed a case of Tabes with a perforating ulcer on the left foot and Charcot joints. The man had had syphilis some years ago. The case had been treated with salvarsanised serum with disappointing results.—Major E. G. Ffrench, R.A.M.C., read a paper (which appears on p. 240) entitled "The Simpson Light in the Treatment of Venereal Lesions."

Reviews and Notices of Books.

A Text-book of Pharmacology and Therapeutics, or the Action of Drugs in Health and Disease.

By ARTHUR R. CUSHNY, M.A., M.D., LL.D.Aberd., F.R.S. Sixth edition. London: J. and A. Churchill. 1915. Pp. 708. Price 15*s.* net.

Professor Cushny takes the opportunity afforded by the production of a new edition of this well-known text-book to raise a protest against the retention of the less important and less reliable drugs in the scheme of teaching and of examining. He has had great experience both as a teacher and as an examiner, and his opinion therefore deserves serious consideration. He maintains that the insistence upon numberless preparations of drugs of questionable value has discouraged interest in therapeutics. He appeals to examiners to break the vicious circle, to lighten the burden of the student and to render the subject of pharmacology more attractive. He boldly sets the example by omitting in this edition of his work all reference to many official substances which he deems superfluous. A fresh system of classification has been adopted; hence it would entail much labour to ascertain, by a close comparison, what preparations have been thus discarded. Those that remain are, however, dealt with in such wealth of detail, and are in themselves of so much importance, that it scarcely seems necessary to make search for omissions.

Every system of classification of drugs ultimately presents difficulties, and is apt to lead to surprising results in spite of the utmost forethought. The title of this volume states that it deals with the action of drugs in health and disease, but the scope is widened in the large section devoted to antiseptics and disinfectants so as to include reference to disinfectants employed for rooms, furniture, &c. The information afforded in the five pages devoted to these disinfectants scarcely seems to fall within the scope of the title, but it would have been a matter for regret had it been omitted. The group of narcotics and the methane series have received the attention they merit, while Professor Cushny's views upon the internal use of alcohol are so well known, and are again presented so forcibly, that they scarcely call for criticism. New chapters have been added dealing with the more recent organic arsenical compounds, with pituitary extract, and with atophan. As the arsenical compounds include the cacodylates, atoxyl, and salvarsan, this chapter is likely to be read with interest. Careful perusal of the chapter on pituitary extract leaves a feeling of dissatisfaction. Some of the pharmacological actions seem quite definite, others are still open to doubt, while the therapeutic uses appear to be very uncertain, though some comfort is afforded by the statement that large amounts have been given without any deleterious effects. Similarly it may be remarked that atophan, which is asserted to have the power of increasing the amount of uric acid excreted, appears to have failed to relieve pain during an acute attack of gout, while observations of its use in chronic gout have given rise to divergent opinions.

The whole volume is clearly written and indicates considerable industry in the accumulation of statements based on recent researches, while the bibliography appended to each chapter will be of value to those who wish to prosecute further investigations. The book is illustrated with numerous tracings from experiments, but these are evidently to be used in conjunction with some practical course of demonstrations, since details of the experiment are very rarely given.

This book should be of great value to students working for the higher examinations in pharmacology. For the general practitioner, although many interesting reasons why the various drugs might be expected to be of service are afforded in the book, the therapeutic sections will be found brief; they may not supply the practical hints which are so often needed. It was perhaps inevitable that the revision of the text and the preparation of the bibliographies should indicate how much this subject owes to foreign research.

Modern Chemistry and Its Wonders.

By GEOFFREY MARTIN, D.Sc., Ph.D. Illustrated. London: Sampson Low, Marston, and Co. 1915. Pp. 351. Price 7*s.* 6*d.* net.

THE achievements of chemistry have probably never attracted so much attention in this country as at the present time. Questions concerning the preparation of glycerine from fats, the production of nitric acid in the air, the separation of benzene from coal-tar, the manufacture of poisonous gases are now common topics of conversation. The war has, to some extent, popularised certain sections of chemical science. It is to be hoped that public attention may also be focussed on those other sections of the science upon which the maintenance and prosperity of many industries depend.

Scientific chemists, as a rule, have been averse from treating chemical science in a popular manner, as this popularisation has in the past tended to limit attention to "wonders," while the economic significance of the advances indicated has been lost sight of. The ingenuous exclamation "How wonderful!" should give place to the thoughtful question: "Is there utility in this phenomenon?" Thoughtful questioning is the attitude of Dr. Geoffrey Martin's book, and for that reason we welcome its publication. He is justified, we think, in saying that popular books on science serve an extremely useful purpose in bringing home to the mass of the people the enormous importance of science to the State. Naturally the result depends upon the way of handling the subject, but when the author's avowed object is to bring the reader into immediate contact with the thoughts of the great leaders of science, whose ideas are too often inaccessible to all but the specialist, he is attempting a public service. The book is not narrowed down to consideration of munitions and war preparations, for the author presents us with interesting and clearly written chapters on radium and the new chemistry, and on the applications of electricity to chemistry, while he tells the romances of sugar and salt, and describes metallic fire-stones and artificial precious stones. His descriptions are sound, attractive, and clear, and the volume should enjoy a wide popularity. Its perusal will repay those eager to understand the nature and meaning of recent chemical developments, and will impress them also with the importance of applying this knowledge to the practical affairs of daily life.

The Theory of Valency.

By J. NEWTON FRIEND, D.Sc. Birm., Ph.D. Würz., F.I.C. Second edition, revised. London: Longmans, Green, and Co. 1915. Pp. 187. Price 5*s.* net.

THIS book is one of the valuable series of text-books of physical chemistry issued under the supervision of Sir William Ramsay, and the call for a second edition shows that it has been appreciated. Recent developments of knowledge bearing on the mystery of valency have necessitated a thorough revision of the subject-matter, and we use the word mystery because, as the author admits, the actual cause of valency is still obscure and no theory yet brought forward has been able to gain general acceptance. Many of these theories are, however, in themselves of deep interest, and the author has done well to bring them under review. It is generally admitted that valency exists and that it connotes the atom-fixing power or atomicity of the element, expressed numerically by the number of atoms of hydrogen with which one atom of the element can combine or which it can displace. But why one atom of sodium fixes a single atom of chlorine, and one atom of calcium two such atoms, and one atom of bismuth three such atoms, and one of platinum four is a question still demanding a clear answer. Another point for inquiry is the possession by certain elements of a double valency, as in the case of iron and mercury, each of which gives rise to two series of salts, the proto- and the per-. The author deals with his intricate subject in an attractive and interesting way. In his view the solution of the valency problem is to be sought in the realm of electricity. Those who reject an electrical explanation of the phenomena of valency are faced by the fact that the most stable compounds in chemistry are formed by the union of elements of opposite electrical potential, whereas elements of like electrical potential do not combine at all, or only do so with difficulty. The author's arguments appear well founded.

JOURNALS.

Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. L., No. 2. Cambridge University Press. 1915. Pp. 65–156. Price 6*s.*—The Influence of Venous Filling upon the Rate of the Heart, by F. A. Bainbridge. This contribution is a continuation and extension of some of the work already done by previous observers in University College, London. It is well known that when plethora or hydræmic plethora is produced in the normal animal the venous inflow to the heart increases, the venous pressure rises, and the output of the heart becomes larger; the heart beats more frequently, and the increase in the pulse-rate may be very considerable. If the venous inflow is increased the venous pressure rises more rapidly and abruptly when the pericardium is intact than when it is opened. The pericardium, by limiting the venous filling of the heart, causes a rise in the pulse-rate which is much more effective in increasing the output of the heart when the pericardium is intact than when it is removed. The author set himself to find the means by which the acceleration of the heart is brought about, and the cause of the acceleration which accompanies increased venous filling of the heart. The experiments were made on anæsthetised dogs; the pulse-rate was recorded by means of a Hürthle manometer attached to one limb of a cannula in the carotid artery, the other limb of the cannula was connected with a manometer to record the blood pressure. The venous blood pressure was recorded by inserting a cannula in an iliac vein close to the inferior vena cava, and connecting it with a manometer containing hirudin dissolved in normal saline solution. The fluids injected into the circulation (jugular vein) were either normal saline or blood, either undiluted or diluted with one-third of an equal volume of saline. Careful attention was paid to the temperature of the injected fluid as well as to the rate of injection. The volume of the heart was recorded by enclosing the ventricles in a glass cardiometer attached to a piston recorder. The volume of fluid injected varied from 200–400 c.c. of saline solution. It was found that: 1. Increased venous filling of the heart, whether produced by rapid injection of small amounts or the slow injection of large amounts of blood or saline solution, leads to a rise of venous pressure and to acceleration and dilatation of the heart; the arterial pressure rises slightly or remains steady. 2. The quickening of the rate of the heart is reflex in origin, since it no longer occurs after division of the vagi and cardiac accelerator nerves and ligature of the suprarenal veins. 3. The acceleration of the heart is due chiefly to diminution of the vagus tone and partly to the increased accelerator tone. There is no evidence that the activity of the suprarenal glands is increased. 4. The acceleration is not necessarily or usually accompanied by changes in the arterial pressure or in the respiratory movements, nor does it depend upon the character or amount of the injected fluid except in so far as this raises the venous pressure. 5. The acceleration is constantly associated with a definite rise of venous pressure and begins when the rise of pressure is sufficient to raise the diastolic pressure and to dilate the heart; after section of the vagi, the cardiac accelerator nerves being intact, a rise of venous pressure is no longer accompanied by quickening of the heart. 6. The reflex acceleration of the rate of the heart which takes place when the venous inflow is increased in the normal animal is caused by impulses arising within the heart, and the effective stimulus is an adequate rise of venous pressure.—Researches on the Nature of Enzyme Action: IV., The Action of Insoluble Enzymes, by W. M. Bayliss. The following is a summary of the author's results: 1. Urease, lipase, emulsin, invertase, lactase, papain, peroxidase, and catalase are active in media from which they can be filtered off by ordinary paper, while the filtrates are inactive. 2. Pepsin and trypsin are very greatly more active in suspensions of the solid preparations in strong alcohol than the filtrates of such saturated solutions are. But these enzymes seem to be capable of a small degree of colloidal solution in such solutions, so that a slight degree of activity may be obtained from them. 3. Enzymic activity is thus manifested at the interface of contact between the solid enzyme phase and the liquid substrate phase. The catalysts concerned are not in true solution.—Physiological Aspect of Photographic Safe Light Screens and an Improved Spectrophotometer, by H. Hartridge. This important communication is highly technical and the reader is referred to the original.—The Reaction of Bile, by S. Okada. Various contradictory statements exist as to the reaction of bile from the gall-bladder. This is probably due to the variety of methods used. The author measured with the hydrogen-electrode the reaction of bile from permanent fistulæ in two dogs under various conditions, as well as the bile from the gall-bladders of various animals. The author describes the methods he used to determine the H-ion concentration of the bile. He finds that (1) the reaction of bile from the gall-bladder is variable—it may be acid, neutral, or alkaline; (2) the reaction of bile from the liver is alkaline, its H-ion concentration is $1{\cdot}5 \times 10^{-8}$ at 23° C., a reaction which turns red lacmoid blue, but does not turn phenolphthalein red; and (3) the reaction of bile from the liver during digestion corresponds to that of pancreatic and intestinal juices, and with the optimal point for trypsin, pancreatic lipase, and erepsin.—The Action of Barium Chloride on the Vascular System, a contribution to the study of the antagonistic action of nicotine and curare, by E. P. Cathcart and G. H. Clark. The authors find that (1) the observation of Langley of the antagonistic action of nicotine and curare in skeletal muscle holds good for visceral muscle of the arterioles; (2) nicotine completely abolishes or definitely inhibits the rise of blood pressure which follows the administration of barium chloride; (3) the subsequent injection of curare restores and may even intensify this pressor action of barium chloride; (4) barium chloride probably does not act directly on the contractile substance of visceral muscle; and (5) barium chloride and adrenalin do not act upon identical parts of the muscle.—The Effect of Isotonic Ringer Solution on Blood Corpuscles, by F. H. Scott. The author's experiments *in vitro* show

that: 1. Dilution of the blood with isotonic Ringer or salt solution causes the corpuscles to lose protein as well as non-protein nitrogen. The corpuscles are thus permeable to these two kinds of nitrogenous bodies. The non-protein nitrogen is in all probability chiefly amino-acids and urea. 2. The protein leaving the corpuscles is not precipitated by an equal volume of saturated sodium sulphate solution at 35° C., but is precipitated by trichloracetic acid. Further investigations on the exact nature of the nitrogenous bodies leaving the corpuscles are promised.—Contributions to the Physiology of the Pulmonary Circulation, by Yas Kuno. The author used the heart-lung preparation of dogs, measuring the pressure in the aorta, vena cava, pulmonary artery, and left auricle to determine the influence of changes in the venous supply on the pulmonary circulation, with pericardium closed and pericardium open.—Note on Vagus Stimulation of the Adrenalised Heart, by M. Kuroda and Yas Kuno. It is known that the vagus is rendered inexcitable by the injection of adrenalin, but whether this is due to a direct effect of the adrenalin or to the increased intracardiac pressure is the question. The authors' experiments lead them to the following conclusion. It is possible that the abolition of vagus excitability is caused by the increased blood pressure which occurs with adrenalin.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

INTERNOL, E.H.V.

(BRITISH DRUG HOUSES, LIMITED, 22 TO 30, GRAHAM-STREET, CITY-ROAD, LONDON, N.)

THIS sample of paraffinum liquidum gave results on testing of the most satisfactory description. To begin with, it is a perfectly colourless oil, is entirely free from odour, and shows no fluorescence. Further, it is quite free from even traces of alkali or acids, and no evidence whatever was obtained of the presence of sulphur compounds. The results of our examination in short show that it is a pure saturated hydrocarbon—that is to say, that it is free from unsaturated hydrocarbons. The specific gravity at 60° F. was 0·881, whilst the viscosity at 100° F. was 245. In our investigation upon paraffinum liquidum B.P., the results of which were published in our issues of Oct. 2nd and 16th last, we pointed out that viscosity was probably a much more important factor in treatment than specific gravity. This oil not only completely satisfies the B.P. requirements, but its viscosity renders it well adapted for an intestinal lubricant.

(1) CALSA; AND (2) TORBET LACTIC OATS.

(TORBET, LIMITED, 10, BUSH-LANE, CANNON-STREET, LONDON, E.C.)

1. Calsa is a special preparation of agar agar which was introduced some years ago for the treatment of intestinal stasis. We examined the preparation on a previous occasion, and we now find that it has since been improved in important directions. Its essential property is that of an absorbent in its swelled form, carrying out the toxic contents of the column. 2. It is suggested that the employment of calsa may well be assisted by a diet of Torbet lactic oats. This preparation is of interest. The oat kernels have been thoroughly washed from undesirable adherent matter and subsequently cooked. The result is a clean, dried, uniformly-sized grain which is sterilised in the process of manufacture. We do not quite understand why the word "lactic" is used in connexion with this preparation, for we could not discover any lactic acid present. The oats on analysis showed a normal composition. The moisture amounted to 9·02 per cent., the mineral matter to 1·80 per cent., and the fat to 7·41 per cent. The method of preparation appears to prevent the fat from getting rancid, and so the attractive flavour of the fresh oat is preserved.

BYNOGEN.

(ALLEN AND HANBURYS, LIMITED, LOMBARD-STREET, LONDON, E.C.)

The results of our analysis of this preparation substantiated the description we have received of it, that it contains milk proteins, dextrin, and malt sugar, with the glycerophosphates of soda, lime, and magnesia. We found that 62 per cent. of bynogen was soluble in cold water, and a large proportion of this consisted of casein, the rest being dextrin-maltose. The soluble mineral matter amounted to 8 per cent. This contained the glycerophosphates in addition to the phosphates carried in by the casein and the malt. Analysis gave the following results: moisture, 6 per cent.; mineral matter, 8 per cent.; protein, 63·40 per cent.; and maltose and dextrin, 22·6 per cent. The preparation is clearly a substantial food, its effects as a tonic food being enhanced by the presence of the organic phosphates which are well known to help nutrition. Further, it showed a distinct digestive action on starch, and the test for active enzymes gave a well-marked response.

SUBITOL.

(CHAS. ZIMMERMANN AND CO. (CHEMICALS), LIMITED, 9 AND 10, ST. MARY-AT-HILL, LONDON, E.C.)

Subitol is introduced to succeed ichthyol (ammonium sulpho-ichthyolate). It presents the same chemical properties and the same consistency as ichthyol, and therefore it may be regarded as possessing the same therapeutic properties. We understand that it is manufactured in Japan. Ammonium sulpho-ichthyolate has a number of therapeutic applications. It has been given in rheumatism and skin affections, while it has also been reported as a useful intestinal antiseptic. But perhaps it has been used more extensively externally in chronic skin disorders. It has also been prepared for use in the form of a tampon or as a pessary or suppository.

EDINBURGH ROYAL INFIRMARY.—In a recent report to the Court of Contributors the committee appointed to consider the annual report of the managers of the infirmary states that one Approved Society (The Scottish Rural Workers) has asked those of its members who have no dependants and who resort to the infirmary for treatment to mark their appreciation of the benefits conferred by authorising the society to pay a proportion at least of their sickness allowance to the infirmary funds. In the year under review contributions from 28 members amounting to £23 3*s.* 9*d.* were thus received through the society. The committee expresses the hope that this practice may become general amongst the other Approved Societies. Approval is expressed with the action of the management in arranging among themselves and their friends, with the assistance of Edinburgh corporation, for the conversion of Consols into new War Loan Stock. This operation, which was on a very large scale, resulted in an increase of the infirmary revenue to the extent of £363 annually. The recommendation contained in the report of last year is repeated, to the effect that every effort should be made to develop systematic collections in large public works, particularly in Edinburgh, but generally within the area from which the patients of the institution are drawn. The ordinary income of the current year was much better than in the preceding one, partly owing to the ready response of the special appeal, and partly on account of the great success attending the inauguration of a badge day.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending July 31st, 1915.

Place.	Rainfall in milli-metres.	Metric tons of deposit per square kilometre during month.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—										
Birmingham, Central*	159	—	—	—	—	—	—	—	—	—
,, Aston	138	0·14	2·50	8·36	1 20	5·00	17 20	2·70	0·30	0 04
,, S.W.	147	0·04	1·02	1·64	0·93	3·10	6·70	1 70	0·30	0·07
Bolton	112	0·03	4·85	5·36	3·15	8·10	21·49	4·82	1·18	0·13
Exeter	71	0·02	1·21	3·34	1·65	2·44	8·66	1·25	0·32	0·02
Kingston-upon-Hull	136	0·14	3·93	4·45	3·80	4·62	16·94	2·85	0·38	0·06
Leicester	130	0·15	4·95	10·71	3·60	2·60	22 05	1 61	0·46	0·10
Liverpool	93	0·60	4·76	5·49	3·15	4·26	18·26	3·43	0·72	0·19
London—										
Meteorological Office	85	0·04	1·50	0·32	4·41	2·04	8 31	2·04	0·58	0·17
Embankment Gardens	102	0·81	7·93	14·47	2·11	5·76	31·08	2·43	0 65	0·22
Finsbury Park	120	0·08	2·45	5·13	1·34	4·02	13·02	2·32	0·68	0·06
Ravenscourt Park	84	0·07	1·74	5·94	1·72	3 44	12·91	2·10	0·33	0 11
Southwark Park	89	0·07	1·70	6·10	0·50	6·66	15·03	3·21	0·76	0·18
Wandsworth Common	77	0·04	0·68	2·34	0·18	3·81	7 05	1·92	0·38	0·07
Victoria Park	75	0·11	1·77	4·82	3·92	5·73	16·36	3·60	0·64	0·18
Golden Lane	102	0·06	3·15	4 38	2·04	4·90	14·54	3·40	0·72	0·18
Malvern	83	—	0·33	0·37	0·79	0·96	2·47	0·56	0·35	0·04
Manchester—										
Ancoats Hospital	131	0·14	4·54	9·89	3·56	6·41	24·54	5·25	0·77	0·08
Bowdon	118	0·01	0·33	1·02	1·20	2·94	5·50	2·52	0·19	0·03
Cheadle	96	0·05	3·27	2·63	3·49	1·74	11·18	2·00	0·29	0·05
Davyhulme	93	0·02	0·68	1·87	1·93	4·28	8·78	3·77	0·32	0 05
Fallowfield	125	0·05	0·97	2·34	1·20	13·75	18·31	3·45	0·28	0·04
Moss-side	150	0·13	1·07	4 24	1·92	8·42	15·78	4·98	0·69	0·07
Philips Park	136	0·08	4·97	4·31	3·89	7 69	20 94	4·84	1·03	0·04
Queen's Park	99	0·06	4·54	1·86	1·83	7·24	15·53	4·32	0·61	0·03
School of Technology	128	0 13	3·48	8·82	2·22	7·50	20·14	5·17	0 56	0·11
Whitefield	115	0·03	3·17	2·86	1·81	1·30	9·16	4·35	0·58	0·05
Newcastle-on-Tyne	70	0·21	4·41	8·40	1·69	3·94	18·65	2 23	0·30	0·12
Oldham	120	0·18	4·41	9·75	2·87	7·66	24·90	3·80	0·81	0·16
York	29	0·04	0·78	1·43	0·40	0·91	3·57	0·50	0·12	0·04
SCOTLAND—										
Coatbridge	93	0·15	2·42	6·46	1·37	2·44	12·84	1·73	0·15	0·12
Greenock	79	0·02	1·91	3·61	1·49	3·14	10·17	1·92	0·14	0·12
Leith	79	0·06	1·87	4·79	3·14	3·46	13·32	2·12	0·31	0·16

* Results unreliable owing to gauge being tampered with.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The public health authorities concerned in the supervision of these examinations were as follows: Dr. J. Robertson, Medical Officer of Health of Birmingham; Dr. J. E. Gould, Medical Officer of Health of Bolton; Mr. H. Lloyd Parry, Town Clerk, Exeter; Mr. A. R. Tankard, Public Analyst, Kingston-upon-Hull; C. K. Millard, D.Sc., Leicester; Dr. E. W. Hope, Medical Officer of Health of Liverpool; The Director of THE LANCET Laboratory, Meteorological Office, London; Mr. J. Ollis, Chief Officer, Public Control Department, London County Council, London; Dr. W. J. Howarth, Medical Officer of Health of London; Mr. W. Osborne Thorpe, Engineer, Urban District Council, Malvern; Mr. J. Warrington, Secretary, Air Pollution Advisory Board, Manchester; Dr. J. B. Wilkinson, Medical Officer of Health of Oldham; Dr. H. Kerr, Medical Officer of Health of Newcastle-on-Tyne; Professor W. P. Wynne, The University, Sheffield; Dr. E. M. Smith, Medical Officer of Health of York; Mr. A. G. Dutch, Sanitary Inspector, Coatbridge; Mr. J. Devine, Sanitary Inspector, Greenock; Mr. Thomas Bishop, Sanitary Inspector, Leith; and Mr. W. W. Kelso, Sanitary Inspector, Paisley.

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; S. F. Burford, Leicester; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Manchester collections; J. J. Dunn, D.Sc., Newcastle-on-Tyne; Samuel Urmson, Oldham; Professor W. P. Wynne, Sheffield collections; S. H. Davies, M.Sc., York; Messrs. R. R. Tatlock and Thomson, Coatbridge; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., Leith and Paisley.

MANCHESTER AND DISTRICT RADIUM INSTITUTE.—This institute has been established a year and the first report of its working and doings was presented at a meeting held on Jan. 20th. The greater part of the energies were necessarily spent in the first year in organisation and getting the machinery into running order. The scheme is now fairly started and the staffs of the constituent hospitals have done their best to make the institute a success, but, of course, the war has brought with it its own difficulties. The greater part of the medical work was the treatment of cancer in its various forms. In the near future it is hoped that the treatment of a number of equally distressing, although not necessarily fatal, diseases will be undertaken. In the treatment of cancer the difficulties still remain many and grievous, and until a sure method is devised of checking the formation of secondary deposits it is possible in but few cases to claim cures. The treatment was carried out by embedding tubes of radium and by radium emanations on a larger scale than has been customary hitherto in this country. In the case of large and deep-seated tumours the embedding method as a whole gave better results than those obtained by the application of superficial flat plates. In a number of cases recorded as "improved" the primary growth had entirely disappeared, thus alleviating much pain and suffering. The number of patients registered during the year was 655, of whom 104 were private patients. Very few non-malignant growths were treated in the Manchester Institute. The importance of having a small research laboratory connected with the institute is advocated in the report by Dr. A. Burrows and Sir E. Rutherford.

THE LANCET.

LONDON: SATURDAY, JANUARY 29, 1916.

The Conservation of Infant Life.

POPULATION obviously depends, apart from immigration and emigration, on the relation between births and deaths, and a provisional statement of the vital statistics of England and Wales for 1915 shows a regular lowering of birth-rate and rise of death-rate compared with the year 1914, and an ominous position with regard to infant mortality. Before the war the serious decline in the birth-rate of this country was fortunately counterbalanced by the satisfactory decline in the death-rate. Now we have to face the circumstance that if the war continues until the end of the second year the destruction of life may amount to half a million men, or over one-hundredth of the population of the United Kingdom. These lives—the flower of our manhood—are in process of being lost for ever, and all we can do is to conserve the lives of those now living and make preparation for watching over the lives of those about to be born. Below the age of three score years and ten, which the Psalmist has taught us, not unfairly, to regard as normal long life, the number of deaths at different age periods progressively declines, until we reach the happy 5–20 age period when, in a relative sense, death may almost be said to disappear. But between 1 and 5 years of age the number of deaths is almost as large as between 20 and 40, and under 1 year of age the number is fractionally greater than between 40–60 years. The actual figures for 1913 (England and Wales) were 95,608 deaths under 1 year of age and 95,070 between the ages of 40 and 60. It is clear that we ought to bestir ourselves as a nation to stop this appalling wastage of infant life; if humanity did not impel us to remedy the evil before the war, approaching necessity should make us do so now.

It is beyond dispute that the mortality of children under 5 years of age, and more especially that of children under 1 year of age, is largely preventable. This has long been recognised by the State, county councils, municipalities, local authorities, charitable organisations, public health officials, sanitarians, medical practitioners, midwives, and many forms of voluntary organisations. But there is still an immense field for activity, as we shall see if we consider for a minute the familiar causes (ante-natal and post-natal) at work in the destruction of the infant. Every conceivable fault in the domestic environment, whether before or after birth, of mother or child, causes some wastage of child life. The housing of the poor and the education of the house-wife have to be considered with even greater seriousness than questions of heredity, which must, nevertheless, not be disregarded. There is indeed much to be done. Some authorities consider that advance can only be made by educational progress and by slow degrees. Admitting that education is the force which may dominate the position eventually, it is certain that money, expended immediately, and judiciously but lavishly, would be of incalculable benefit. It is significant that the Imperial grants for maternity and child-welfare work, decided upon before the war, are being continued, and that county councils and sanitary authorities are being officially urged to conserve the infant health of the population, even at the present time when the policy of national retrenchment is becoming daily more urgent.[1] It is impossible to study the four reports recently issued by the Local Government Board on Infant Mortality, the annual reports of the Board of Education, of the Scottish and Irish Local Government Boards and of the medical officers of health of the London and other county councils and sanitary areas, together with many unofficial publications, without coming to the conclusion that money plays a vital part in the problem, and that if a very large sum of money were now available the existing organisations could greatly increase their field of usefulness. We are led to these observations by an interesting communication which will be found in another column from a correspondent who is well informed in public affairs. He sketches briefly, and with no attempt at detail, a scheme which aims at bringing the public into close and sympathetic relation with the whole problem of infant welfare. Those who regard educational influences as of paramount importance need not consider that the proposals of the scheme begin and end with mere questions of money, but undoubtedly the acquisition of the money of the public is the first thing aimed at.

Neither the State nor the local authorities, however alive to the critical position, can be expected at the present time to increase materially grants for the special purpose of reducing the present wastage of juvenile life. At first sight it would seem equally hopeless to appeal to the public, already hard pressed by the financial claims arising out of the war. Nevertheless, if a way could be found to touch the heart and imagination of the upper and middle classes, the money would not only be forthcoming, but interest in the problem of infant welfare would be stimulated to a remarkable degree. The outlines of a scheme which in its simplicity and even in its sentimentality might prove successful will be found on p. 259. No doubt there would be many and serious difficulties in carrying out such a project, but it has the merit of placing the subscriber in personal and imaginative touch with the problem of maternal

[1] Supplement (Cd. 8085) to the Annual Report of the Local Government Board, 1914-15.

and infant welfare, and it would tend to bridge over the gap, already lessened by the war, between the masses and the classes. Moreover, it has strong educative possibilities, for it would bring home to every subscriber one aspect of that grim struggle which the State and sanitary authorities are ceaselessly waging—the fight against death from preventable disease. Further, the interest aroused by such a scheme would probably lead to a great increase in the number of local voluntary workers.

The National Association for the Feeble-Minded.

THE annual report of the National Association for the Feeble-Minded has reached us accompanied by a reprint of the proceedings at the Conference held in June, 1915, at the Guildhall, London, to determine the best methods of ascertaining the presence of mental defect. The two documents furnish much valuable matter for the consideration of medical men and other social workers who are interested in the care and training proper to mental defectives, and in the due control of such persons for the benefit of the community at large. The National Association for the Feeble-Minded, an active body, was founded in 1901 for "promoting the welfare of the feeble-minded," but it has extended its efforts beyond the object specified in its title, and aims at the prevention of many manifest evils that result from the uncontrolled liberty of many persons who are not liable to restraint under the lunacy law. Shortly after its foundation the association, among other public bodies, impressed upon the Government the gravity of the existing position, and contributed to the combined efforts which led in 1904 to the appointment of a Royal Commission to inquire into the whole subject, an inquiry which led to the passing of the Mental Deficiency Act in 1913. Two prominent members of the association, Mrs. HUME PINSENT, and Mr. W. H. DICKINSON, M.P., were on the Royal Commission, and are now on the Board of Control with which the Lunacy Commission has been associated. To found and maintain homes and colonies for the feeble-minded is one of the most important objects of the association, and we would call attention to the statement of the secretary, Miss KIRBY, that at this time especially, when both public interests and public funds are so largely absorbed in the European war, it is still left to the voluntary homes to bear the greater part of the burden of the care of the feeble-minded. The last report of the work of the association shows clearly how much more could be achieved by adequate support.

The valuable Conference at the Guildhall, which had for its object "to determine the methods of examination best adapted to ascertain the presence or otherwise of mental defect," was concerned with the due recognition of the mental defect which indicates the need of care or control, but which occurs in subjects who are not amenable to the operation of the Lunacy Acts. Such persons are now liable to be dealt with under the Mental Deficiency Act, and, indeed, form by far the most important group with which that Act was intended to deal. This is the group of defectives known generally as feeble-minded, as distinguished from the lower grades of idiots and imbeciles who, in many instances, were cared for and controlled to some extent under pre-existing laws. Seeing that the Mental Deficiency Act has now created a statutory class of "mentally deficient" persons quite outside that which is conventionally and legally known as "lunacy" or "unsoundness" of mind, it is a matter of practical importance for all administrators and local authorities under the new Act to endeavour to come to some general agreement on the due diagnosis of mental deficiency. It may be well to remember that the Royal Commission which was instructed to report on this subject generally, and also on the working of the lunacy laws and on any amendments of these laws that might seem desirable, recommended that the persons now described as mentally deficient should be brought within the scope of an amended lunacy law, and that the Act as amended should include, under the comprehensive title of "mental defect," all cases of such defect from whatever cause arising, including, of course, "insanity," or lunacy, or unsoundness of mind. The Mental Deficiency Bill, as introduced into Parliament finally in 1913, and much altered in many respects, seemed to many observers to raise more difficulty in the matter of the due recognition of cases of mental deficiency usually known as "congenital" than of those usually spoken of as "acquired insanity."

Sir BRYAN DONKIN, who presided over the Conference, pointed out that in cases of "insanity," as well as in all other cases of mental defect, the diagnosis and consequently the necessity of care and control depends in practice mainly on the careful observation, often over a long period of time, of the conduct of the person in question. He further mentioned the difficulty felt by some in the apparent requirement by the terms of the Act of a strict demonstration of the origin "at birth or an early age" of "mental deficiency." This difficulty is occasioned by the prominent place accorded at the head of the Act to the so-called "definitions" of mental deficiency and may be more apparent than real. A well-reasoned opinion on the nature of any case of this kind should be as valid in evidence as it is now in other cases of mental or physical disease. It is certainly clear, however, that some administrators do find this difficulty a considerable one, especially in cases where the early history of a mental defective cannot be arrived at by observation or inquiry; but it may at least be hoped that it will prove as surmountable in practice as Sir BRYAN DONKIN seems to anticipate. There is no doubt that at the present moment the diagnosis and care of our mental deficients is a pressing matter.

Annotations.

"Ne quid nimis."

EUSOL.

WE publish in another column a letter from Mr. R. Glode Guyer, of a well-known firm of manufacturing chemists, showing good reasons why the original formula of eusol should be carefully followed. His observations, in fact, are of the greatest interest and importance. A suggestion was made in our columns some weeks ago that a mixture of bicarbonate of soda with chlorinated lime might be substituted, this suggestion being based on the assumption that hypochlorous acid was the effective antiseptic agent concerned. In this case the excess of CO_2 in the bicarbonate of soda liberates hypochlorous acid. Boric acid also liberates hypochlorous acid, but it is quite clear from Mr. Guyer's letter that the action of eusol differs in very important respects from that of a mere solution of hypochlorous acid. For one thing boric acid, as is shown, acts as a stabiliser, while the bicarbonate of soda and chlorinated lime mixture rapidly deteriorates. But the most important difference is that while the boric acid and chlorinated lime mixture, or eusol, can be used intravenously with safety and success, a mixture of chlorinated lime and bicarbonate of soda cannot, since the latter solution coagulates the blood. The original formula of eusol, therefore, should be very carefully adhered to. It would be interesting to know the reason of the specific action of the boric grouping. It is obvious that eusol is a very complex mixture, and it is therefore impossible to change one of the constituents without upsetting the balance of the whole. While hypochlorous acid is the active antiseptic agent, it is probably because this substance is present in an almost neutral system that eusol can be so freely employed. In the observations by Professor Lorrain Smith and his colleagues, which were made with a mixture of bleaching powder and boric acid, the substitution of sodium was considered, and the important advantages of the calcium base made its retention deliberate. It happens, however, that for other reasons no modification can at present be accepted, as serious results might ensue. The application of eusol is being extended to the treatment of general septic conditions by intravenous injection. The work is still in the experimental stage and the reasons underlying the successful results obtained are not yet elucidated, but it would be at least premature to say that here hypochlorous acid is capable of acting without the coöperation of the other elements present. In working at the subject experimentally in animals it has been found that the minimum fatal dose of pure hypochlorous acid is much less than when hypochlorous acid is present in the condition in which it exists in eusol. It is further to be noted that sodium hypochlorite cannot with safety be injected intravenously—another indication that the substitution of sodium bicarbonate for boric acid is inadvisable. The excellent work that eusol as an antiseptic is capable of doing is well illustrated in the clinical report on its applications which has just been issued from the Department of Pathology in the University of Edinburgh. This investigation was undertaken in response to a request made by the National Insurance Medical Research Committee early last year. In this report, which we propose to publish in full, the general conclusion is that further clinical experience of eusol in a great variety of cases has proved it to be a non-toxic, non-irritating, and efficient antiseptic. It is stated, further, that nothing in this experience has been more striking than the fact that, while eusol is highly destructive to bacteria, it is non-toxic to the tissues. While free hypochlorous acid is regarded as the most essential ingredient, there is present also a sufficient quantity of biborate of calcium to give the solution a reaction alkaline to litmus. It is stated that this feebly alkaline solution can be introduced into wounds or cavities, and can be left in such wounds or cavities with perfect safety—indeed, the opinion is expressed that in lacerated and contused wounds and in compound fractures eusol is the most efficient antiseptic which we possess. Eusol has been tried in the treatment of general septic toxæmia by intravenous injection, and in several cases the toxæmia has been successfully overcome. Further research is progressing in this direction.

FRACTURE OF THE LUMBAR SPINE WITHOUT COMPRESSION OF THE CORD.

WE have recently called attention to the not well-recognised fact that fractures and dislocations of the cervical spine may occur without injury of the cord.[1] In the lumbar spine radiography has shown that fractures are also possible without injury of the cord, and the fact is little known. In the *Interstate Medical Journal* for December Professor W. C. Campbell, of the University of Tennessee, has reported five such cases. In most of them the diagnosis had been missed. As they were all seen within a short period, and the literature of the last five years tells nothing on the subject, the conclusion is that such injuries must be frequently overlooked. The symptoms are not definite. There may be pain, which is usually referred to the sacro-iliac joint or the lower abdomen or described as sciatica. The patient generally complains of weakness, and especially of inability to lift even light objects. A small kyphosis may indicate the injury, but is by no means diagnostic, as an abnormally long spinous process presents the same appearance. In neglected cases the symptoms increase, and it is possible that formation of callus and further deformity may interfere with the canal. The following are some examples. A railroad fireman, aged 30 years, was seen on April 3rd, 1913. Three months previously he fell from his engine while on a bridge, striking a log 30 feet below. He was taken to hospital, where he remained for two months and was treated for a fracture in the region of the ankle. No attention was paid to his spine though he complained of much pain in the lower lumbar region and lower limbs. Three months after the accident he was seen by Professor Campbell; he arrived with the aid of two men and crutches. In both lower limbs there was deficient muscular force but no paralysis. A distinct kyphosis marked the point of injury in the dorso-lumbar region. A radiogram showed fracture with impaction of the body of the first lumbar vertebra. In another case a man, aged 48 years, was seen on August 13th, 1914. On May 3rd, 1912, he jumped from the top of a falling telephone pole, alighting on the buttocks. For

[1] THE LANCET, July 10th, 1915, p. 84, and Dec. 4th, p. 1258.

some time he suffered from general muscular pain and was confined to bed for ten days. He was then able to get about, but pain persisted in the left hip and sacral region. He had several attacks of loss of consciousness in which he fell, but there were no convulsive movements. He had been treated for neurasthenia and hysteria. Examination showed only marked limitation of all the movements of the spine. A skiagram revealed a fracture of the fifth lumbar vertebra. In a third case a boy, aged 11 years, was seen on Dec. 7th, 1914. On Oct. 8th he fell from a tree, a distance of 8 feet, falling on the buttocks. He was stunned for several minutes, but went home and continued to go to school for two days. On the second day he had pain in the left lumbar region. Fever began on the third day and lasted several weeks, during which time he had pain in the left side and lower part of the abdomen and left leg. The left hip gradually became flexed. On examination he walked with the hip flexed and his hand on his knee. The hip could not be extended beyond 90°. Abduction was slightly limited, but flexion and rotation were free. The psoas muscle was contracted, and the left lower quadrant of the abdomen was slightly tender. He could not bend the spine to the right and only slightly to the left; flexion was nearly normal and extension limited. A radiogram showed lateral displacement with possible fracture of the articular processes of the fourth lumbar vertebra. The general plan of treatment consisted in traction on the head and lower limbs with gradual hyperextension of the spine until over-correction or the best possible position was attained, and application of a plaster jacket in extreme hyperextension. Under this treatment all the cases did well. It might be supposed that considerable force is necessary to fracture the vertebra, but the following case shows it is not. A farmer, aged 20 years, slipped and fell backwards, striking his spine against some curbing. For three days he walked about in great pain in the lower lumbar region. He then became so weak that he could not walk. On examination marked lumbar kyphosis was found with limitation of movement but no paralysis. A radiogram showed impaction and comminution of the body of the second lumbar vertebra.

THE THERAPY OF WHOOPING-COUGH.

As a disease that is always with us, whooping cough is deserving of attention. Dr. Nelly Benstz, of Amsterdam, has recently recorded[1] her experience with a few of the innumerable remedies that have been recommended for its treatment. She divides these into four classes. In Class 1 are medicaments that had no influence on the course of the disease—namely, adrenalin, inhalations of oxygen or of cypress oil, hot baths, and an extract of thyme known as pertussinum. The drugs in Class 2 gave better results—morphine or dionine in doses of from 1 to 4 milligrammes two or three times a day, opium, and droserin. Class 3 contains drugs that gave decidedly favourable results—bromoform, antipyrin, extract of belladonna; a 1 per cent. solution of silver nitrate painted on to the pharynx daily, in the case of older children, and the inunction of a fluorine compound known as antitussin into the neck and chest as a counter irritant. Dr. Benstz places in Class 4 the drugs that gave good results almost without exception; these are phosphate of codein in doses of from 10 to 30 milligrammes a day, which is particularly useful in cases with much vomiting; sulphate of quinine, which lessens the cough and improves the appetite; and potassium bromide, of which infants should receive 15 grains a day, the older children from 15 to 40 grains a day. Dr. Benstz also finds that whooping-cough in children is always accompanied by a leucocytosis, the white cells reaching a count of 40,000–50,000 at the acme of the disease. The differential count shows an increase in the percentage of lymphocytes, both large and small, with a diminution in the proportion of polymorphonuclear and eosinophile cells.

[1] Nederl. Tijdschr. v. Geneesk., Amsterdam, 1916, 1., 153.

LONG-HEADS, SQUARE-HEADS, AND SHORT-HEADS.

SINCE the almost entire disappearance from ethnology of the Aryans and the merging of the Celts in the Alpine stock of Central Europe, the old race divisions have practically vanished. It would, indeed, seem, in view of the now accepted doctrines as to the distribution of the long-headed and short-headed races throughout Europe, that the French are half Germans, the Germans half Celts, the Anglo-Saxons mainly Scandinavians, the Celtic Fringe not Celtic at all but Iberian. Even the Basques would seem to have ceased to be a homogeneous racial relic, and to be Iberians or Alpines according as they live south or north of the Pyrenees. Not a little of the Germanisation of the older ethnologists may be said to have been due to the teachings of Max Müller, whose assiduously preached Aryans, emanating from a vague plateau in Central Asia, were virtually Germans. He was followed by Bergmann, among others, with his Scythian ancestry of the Slavonic and Teutonic races, and among ourselves by such brilliant historians as Stubbs and Freeman, who traced the institutions of our Anglo-Saxon ancestors to the German forests and to their denizens as described in the "Germania" of Tacitus. Historians such as Coote, with his theory of Roman influences, and anthropologists have for many years been fighting counter to these doctrines. By the aid of craniometry it is now pretty well established that Europe is at most divided between two or three strata of races—the dolichocephalic, the mesocephalic, and the brachycephalic. The dolichocephalic are the oldest, and are pre-Aryan. On the high authority of Ripley, Keith, Chalmers Mitchell, and others we now know that the dolichocephals or long-heads, coming originally from the northern shores of Africa, have encircled Europe to the north-west as far as Finland. The short-heads are at most only a zone or offshoot in Central Europe of some race derived from Asia, and are perhaps the Aryans or Aryan Celts. They brought with them from beyond the Black Sea the Sanskritic language-drift, cremation, and the use of metals. That peculiar and, to our taste, unpleasing type of German head, which looks square and is exemplified by the portraits of Von Hindenburg, may be said to be in type Alpine. It is in appearance, if not in fact, brachycephalic, and its squareness may be the origin of the word *boche*—a French argot word meaning blockhead (see Rigaud's "Argot Moderne," 1888). This type of German probably owes his aspect to original brachycephaly, aided by sexual selection. He is rather Bavarian than Prussian, but the type, so common in the German army, is found throughout the empire. Primitive peasant women marry the type of man voted

handsome by their fellows. A fleshy-necked, short-headed type has probably always set Gretchen adoring. The Basque, as Professor Ripley points out, has often a long head behind his peculiar but not unpleasing brachycephalic type of face, and sometimes the Teutonic square-head *may* be really long. Proverbial wisdom is favourable to the long-headed man, who is held to be sagacious, whereas the bullet-headed man is the dunderhead, the ignoble creature, the barbarian. "He would have whipped poor bullet-head, so they called the negro," says De Foe in "Colonel Jack" (1722). And the seventeenth century "Dictionary of the Canting Crew" speaks of "a dull silly fellow" as "bullet-headed." The French have some 15 idiomatic sayings referring to the head, but in only one case do we find an allusion to its shape. They say "C'est une tête carrée" in reference to an obstinate fellow. According to Ripley, people do not as a rule pay regard to the shape of the head, despite the above citations. The long-headed Greeks of antiquity made their statues brachycephalic. It is a question, indeed, whether the broad heads are in any way inferior to the long heads in intellectual achievement or the capacity for civilisation. And this being so, it would be wiser for the Anglo-Saxon to pride himself on the excellent use that during the centuries he has made of culture-drifts, which have given him freedom and other benefits, rather than on the shape of his skull.

RETINAL GLIOMA IN A BOY AGED 13.

GLIOMA of the retina almost always occurs in infants or young children, and is most often, indeed, congenital. Dr. E. Paparcone has recently described[1] a case occurring in a boy aged 13 within a month of a slight injury to the eye. While playing the boy ran his right eye against a low branch of a tree; the blow was painful but seemed to cause no further trouble. A few days later the sight of the eye began to fail. A month later the boy was seen by Dr. Paparcone, who found the left eye quite normal; the vision of the right eye was reduced to 5/30, the cornea, iris, and intra-ocular tension were normal, but examination of the fundus showed a large oval white area in the internal and lower segment about the equator of the eye. The white surface was not shiny, was fairly sharply delimited, and was traversed by two minute blood-vessels; there was no retinal œdema or elevation. Leucosarcoma of the choroid was diagnosed, to the exclusion of tuberculoma, detachment of the retina, cysticercus, and some congenital defect. The patient disappeared for four months and returned with a manifest intra-ocular tumour. The eye was removed under local anæsthesia; the boy was in perfect health more than a year later. Examination of the eye showed a tumour free in the vitreous and another adherent to the choroid. The tumour was found under the microscope to consist of small round cells consisting mainly of nucleus and grouped closely round blood-vessels; structures resembling the so-called Wintersteiner's rosettes were seen; the blood-vessels were numerous and thin-walled. Cyst-formation and hæmorrhages were not observed. A few canals between the gliomatous cells were detected; ganglion cells and neuroglial cells were not seen. The general structure of the tumour was that of a tubular angiosarcoma; Dr. Paparcone concludes that it was an endophytic glioma of the retina, with a metastasis into the vitreous. Alternatively he calls it a neuro-epithelial glioma, or a glio-sarcoma, or a glioma sarcomatodes. He has found a single case like his own in the literature of the subject, to which he makes numerous references. But how trauma of the eye can give rise to the development of such a tumour as is described above he is not able to say.

[1] Lo Sperim., Florence, 1915, vol. lxix., p. 855.

CEREBRO-SPINAL FEVER IN RELATION TO CERTAIN COSMIC PHENOMENA.

IN the *Journal of the Royal Army Medical Corps* for November, 1915, Lieutenant Arthur Compton gives the results of a series of interesting observations concerned with the temperature and the relative humidity of the air in relation to the cases of cerebro-spinal fever occurring at Weymouth during March–June, 1915. Referring to humidity, Lieutenant Compton shows that whenever the curve passed through a maximum value the occurrence of a case of the disease was an almost invariable accompaniment. In other words, the degree of saturation of the atmosphere by water-vapour may be an etiological factor in determining an outbreak of the disease. Referring to temperature, Lieutenant Compton's observations reveal the fact that cases of the disease most often made their appearance in connexion with minimum readings on the curve or when the maximum and minimum temperatures were not widely separated. That is to say, that the cases are most liable to occur when the temperature conditions are equable. No doubt equable temperature conditions, as Lieutenant Compton points out, are favourable to the survival of the meningococcus in the air, and possibly also to its multiplication there. The number of cases of cerebro-spinal fever dealt with in this investigation was only 15, and it remains to be seen if similar careful observations in other localities and with larger numbers of cases yield similar results. From the material available Lieutenant Compton seems to have demonstrated that two factors may determine the incidence of cases of cerebro-spinal fever—namely, sudden saturation of the atmosphere by water-vapour, combined with equable conditions of temperature.

INVERSION OF THE PELVIC BONES AS A CAUSE OF DEFORMITY.

A NOVEL cause of female pelvic deformity, due to developmental inversion of the pelvic bones, whereby the ilio-sacral or ischio-pubic segments take on a male instead of a female type, is described by Dr. D. Berry Hart in the current number of the *Edinburgh Medical Review*. In addition to the characters ordinarily assigned to the female human pelvis—greater width and roominess with lighter general structure—Dr. Hart calls attention to the different shape of the sacro-sciatic notch as seen in the two sexes. In the male the arch forming the upper border of the notch is comparatively sharp and is formed by the ilium alone, whereas in the female the arch is flattened and the posterior curve is formed principally by the sacrum. Again, in the male the sacral auricular surface is usually made up of two and a half or even three sacral vertebræ, while in the female only two vertebræ take part in this structure, apart from special conditions such as kyphosis or the existence of six sacral segments. If inversion or change of sexual type of the pelvic bones occur, the sacro-sciatic notch in

the female may assume the male type and a general narrowing of the pelvic outlet may ensue. Dr. Hart has found, in all, seven instances of such abnormality, from his own specimens and from described cases. The commoner form of inversion is that affecting the ilio-sacral structures, which results in narrowing of the brim of the pelvis and may call for pubiotomy or Cæsarean section in case of labour; the rarer ischio-pubic variety, on the other hand, produces narrowing of the outlet, and spontaneous labour may take place. The alteration in the shape of the sacro-sciatic notch accompanying these deformities could probably be recognised by skiagraphic examination of the pelvis, the lateral aspects of which have been somewhat neglected by obstetricians; and in this way the congenital deformity resulting from inversion could be recognised before labour occurred and distinguished from the funnel-shaped and the kyphotic pelvis. Doubtless, now that this peculiar developmental error has been described, other instances of it will be put on record, and like most newly discovered pathological conditions it will turn out to be less rare than at first seems indicated.

THE "MILK DIAGNOSIS" OF PREGNANCY.

Professor M. Kiutsi, of the Hokadote Hospital, has contributed an article to the *Chugwai Tji Shimpo*, in which he claims to have demonstrated antibodies in the milk of patients and animals who became pregnant during lactation. The English translation of the article which has been sent to us for comment is not very easy to follow, but it seems that a ferment destructive to the trophoblast can be demonstrated in milk by the dialysing method and also by a method which Professor Kiutsi describes as follows: Two grammes of pure blood charcoal are placed on a filter paper on a funnel. A mixture is made of 2 c.c. of milk and 3 c.c. of distilled water. This mixture is dropped very slowly on to the centre of the charcoal and stirred into it with a glass rod. After a few minutes' interval 7 c.c. of distilled water are added and about 5 c.c. of filtrate are obtained through the filter paper into the test-tube (filtrate No. 1). This is treated as before with fresh charcoal and water till filtrate No. 2 is obtained. This by similar treatment gives filtrate No. 3. The latter is made up to 10 c.c. with distilled water and tested by the "panpurol" reaction. If the reaction is negative two-thirds of the filtrate No. 3 is made up to 10 c.c. with distilled water and 0·05 gramme ninserin added and left for eight hours. It is then filtered and the panpurol reaction again tried. A positive panpurol reaction now indicates pregnancy and a negative reaction its absence. The ferment is destroyed by heating to 120° C. (? F.) for 30 minutes, but remains active when heated to any temperature below 110° for that period. Panpurol is an indicator with the same chemical structure as ninhydrin, and gives similar reactions with the end-products resulting from protein destruction. It has been used in Japan since the war made ninhydrin unobtainable. Professor Kiutsi's paper says: "To obtain panpurol reaction 0·2 c.c. of 1 per cent. panpurol solution is dropped into 10 c.c. of liquid to be tested. Shaking a little, the mixture is taken on a flame and boiled until the entire liquid diminishes to about 2 c.c. Before 15 minutes the liquid turns or tints purple. This is the positive reaction. Otherwise the reaction is negative." Professor Kiutsi also claims that antibodies can be demonstrated in the milk in cases of disease of the bones and pulmonary tuberculosis, but does not give full details. The diagnosis of pregnancy during lactation is not often of such urgency that it is necessary to use a serum reaction, as the local physical signs are usually diagnostic, but, in veterinary practice, the easy method of diagnosis thus given may be of considerable use, and also from a purely scientific point of view the research is of great interest. Medical research carried out by our Japanese confrères in Japan is so rarely accessible to us that we welcome the move that Professor Kiutsi has made in distributing English reprints of his articles.

INTRAVENOUS INOCULATION OF PNEUMOCOCCAL VACCINE.

Dr. W. Watkins-Pitchford, director of the South African Institute for Medical Research, informs us that useful results are being obtained from the research work on pneumonia at present being carried on by Dr. F. S. Lister. Dr. Lister has succeeded in demonstrating the great advantage of intravenous as opposed to subcutaneous inoculation of pneumococcal vaccine for the production of agglutinins and opsonins by the tissues. He finds that whereas the subcutaneous inoculation of doses of 100 or 400 millions of killed pneumococci repeated thrice gives rise to no demonstrable agglutinins or opsonins in the sera of rabbits, four days following the intravenous inoculation of a single dose of 100 millions of a similar vaccine agglutinins and opsonins are easily demonstrated. The titre of the serum of a rabbit so inoculated increases with a second and third inoculation of a similar nature. Further, the serum of a human subject inoculated intravenously on three occasions with a relatively weak vaccine made from various strains of pneumococci was subsequently shown to contain agglutinins and opsonins for each of these strains. These are the results of a preliminary investigation, and although from a laboratory point of view far in advance of anything previously obtained, they require further elaboration.

UNAUTHORISED USE OF MEDICAL TITLES: A SCOTCH DECISION.—In a "note of suspension and interdict" an interim interdict was granted in the Bill Chamber, Edinburgh, to restrain from the use of medical titles a number of individuals, including a druggist, a clerk, and a man named W. Temple. The interdict asked for seeks to prevent these persons from using in connexion with a business carried on at Edinburgh and at Glasgow "the name or title of doctor, or its contraction 'Dr.,' whether used in association with the names 'Temple,' 'Temple Company,' or 'Temple Company, Limited,' or not, and from pretending that they are doctors or medical practitioners, and from taking or using any name, title, or description implying that they, or any of them, are persons registered under the Medical Acts, or are persons especially qualified to practise medicine in Scotland, and in particular from displaying upon the premises at 7, West Register-street, Edinburgh, or elsewhere, or otherwise advertising" notices in certain terms. An order is also asked for to compel the respondents to obliterate from the walls of the premises occupied by them the name or title of "Dr. Temple" and other descriptions. After hearing counsel the Lord Ordinary ordered answers in eight days, granting an interim interdict as stated. On the deferred hearing Lord Anderson passed the note for the trial of the case in the Court of S ssion, and continued the interim interdict, but modified it by excluding the reference to Glasgow, on the ground that the Royal College of Physicians of Edinburgh was only entitled to speak with regard to Edinburgh itself.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Irish Medical War Committee.

AN Irish Medical War Committee was formed some months ago for the purpose of assisting the naval and military authorities to obtain a sufficiency of medical officers. The Committee is constituted of representatives of the several universities and licensing bodies with the addition of representatives of the Local Government Board and a few other medical men of influence. The chairman is the President of the Royal College of Physicians, and the honorary secretaries are Mr. M. R. J. Hayes and Mr. T. Hennessy, both of whom have much experience of organising work. The Committee has now been recognised by His Excellency Lord Wimborne, who is Director of Recruiting in Ireland, as the proper medium of recruiting of medical men in Ireland. The Committee offers its assistance in making arrangements for the practices of medical men who accept commissions.

The Queen's University of Belfast.

From the report of the Vice-Chancellor for the year 1914–15, just issued, it appears that altogether there were 211 entrances, 10 less than in the previous year. The statistics of students in attendance demonstrate forcibly the large numbers of those in the Faculty of Medicine, and the gradual increase of women students in some of the other faculties. Out of a total of 584 students at the University, 275 were medical—that is, in the Faculty of Medicine there were actually 10 students in excess of the total numbers in all the other faculties of arts, science, law, and commerce. Indeed, without the medical faculty the numbers of University students would be diminished by one-half. Out of the 584 students in attendance 413 were men and 171 women. In the Faculty of Medicine there were 37 women and 238 men in attendance, while in the Faculty of Arts there were 65 women and 88 men, and in Science 40 women and 50 men, that is, in the two faculties of arts and science there were 105 women to 138 men. In former times these two faculties were combined and no women attended, but there was a larger attendance of men. The question naturally arises, Where are the men going to now? It is clear that, outside the Faculty of Medicine, the Queen's University of Belfast is rapidly becoming an institution mainly for women.

Ulster Medical Society.

At the first laboratory meeting of this session of the Ulster Medical Society, held on Jan. 20th in the Pathological Laboratory of the Queen's University, Belfast, Professor W. St. C. Symmers and Dr. W. D. Thomson contributed a paper on the Bacteriology of Infectious Pneumonia of Horses (Pink Eye). Dr. Thomson showed several specimens, including one of Spontaneous Rupture of the Heart. Dr. John Campbell showed a specimen of Malignant Adenoma of the Uterus. Dr. G. A. Hicks showed an Appendix with Coproliths, and two Fibroids removed by Hysterectomy. Mr. A. B. Mitchell showed a specimen and microscopic slides of an Accessory Pancreas removed for Acute Abdomen. Dr. C. G. Lowry showed two Fibroids removed by Hysterectomy. Mr. S. T. Irwin showed 20 loose bodies removed from a Knee-joint.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Treatment at the Front of Affections of the Ear.

M. Baldenweck deprecates the use of injections and instillations in affections of the ear as well as the use of any drug or special antiseptic treatment as long as the patient is in the fighting lines. If the affection follows an explosion the ear and the external meatus should be cleaned with a swab of cotton moistened with boiled water and a dry wick left in the meatus. If the secretion be abundant a wick should not be employed but simply some cotton threads. For deafness nothing need be done. These instructions are with reference to soldiers at the front, but for vertigo rest is required and frequently the administration of bromide. If the affection was not consequent on an explosion it can be easily seen whether a plug of wax is present, and if so simple syringing with warm water is to be employed. If a rise of temperature occurs the case should be sent at once to an otological centre. For pain the possibility of a dental origin should not be forgotten.

A Serum for Use in Cases of Gas Gangrene.

The frequency of gas gangrene has already been greatly diminished by the prophylactic application of antiseptics. The new serums introduced by Dr. Weinberg and Dr. Séguin and brought to the notice of the Academy of Sciences by Dr. Laveran have also, I am informed, a marked efficacy. The B. perfringens, although the most frequent, is not the only organism concerned. Numerous others occur and sometimes play a principal rôle in secreting virulent toxins. In fatal cases death is due to a toxæmia which is presumably the result of simultaneous action of various toxins secreted by the secondary pathogenic organisms. Dr. Weinberg and Dr. Séguin have succeeded in preparing protective serums which appear to have specific action. They have found it very difficult to prepare a polyvalent serum which should be effective alike against the microbes and the toxins, but they have shown that the best means of reducing the number of fatal cases is to apply preventive treatment to all the wounds of war by means of a composite serum consisting of a mixture of serums acting against the several most dangerous microbes. The experience already obtained has been most favourable.

The Bradycardia of Fatigue.

M. Gouget's attention was arrested by the frequency of bradycardia in sick soldiers at field hospitals arriving directly from the front. Of 133 patients without pyrexia, 44, or about one-third, showed on arrival a pulse-rate of various degrees of slowness, varying from 58 to 38 beats per minute. Other patients showed a relative bradycardia in the course of febrile affections usually attended with rapid pulse. This bradycardia was sometimes accompanied by irregularity and showed itself very sensitive to accelerating influences such as movement and inhalation of amyl nitrite. It was accompanied in general by marked lowering of arterial tension and almost always disappeared in a few days, though it was sometimes prolonged for two or three weeks. Met with in the course of the most various affections, it seemed independent of the nature of the illness and attributable solely to the state of fatigue which characterises all of them. It is a bradycardia of exhaustion probably of nervous origin.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Indian Students and British Medical Qualifications.

A BOMBAY Government Press Note has notified Indian students seeking British medical qualifications that they are required to provide themselves with certificates in the form prescribed therein and countersigned by the authorities specified (which are appended to the notification). When the forms are filled in the certificates should be signed in duplicate, one copy being given to the student concerned and the other forwarded by the countersigning authority in each case to the Secretary for Indian Students at the India Office, London.

Malaria in the Punjab.

Owing to the unusually dry season there has been much less malaria in the Punjab than usual, but the medical department is not on that account relaxing its efforts to cope with the malaria problem. Major Gill, I.M.S., suggested that it would be an excellent thing to obtain twice a year a "splenic index" of the children attending schools in the Punjab. Two examinations have already been undertaken, and the third is being carried out. It is hoped by this investigation to get a good indication of the incidence of malaria in the districts and towns of the province, and with this information the medical authorities will be able to utilise opportunities for prophylactic treatment to the best advantage. It may be added that the quininisation of scholars in Amritsar district gave such results as to encourage the extension of the experiment to other areas.

A High Birth-rate.

A good harvest has a remarkable effect in increasing the population. A report on sanitation in Rajputana for 1914, which has just been published, shows that Ajmere-Merwara had the high birth-rate of 46 per 1000, against 43 in the previous 12 months, the harvest of the year being proportionately good. The often noticed preponderance of boys as compared with girls continued.

Danger of Yellow Fever.

The Calcutta corporation at their monthly meeting considered the health committee's report and Major S. R. Christophers's memorandum on the measures advisable in regard to the above. Dr. Haridbone Dutt said that since the cutting of the Panama Canal scientists had been dreading the possibility of the introduction of yellow fever to Calcutta. This scourge was spread by a mosquito common in India, and particularly in Bengal. Major Christophers had prepared an excellent note, and he laid stress upon taking vigorous steps in connexion with boats and ships plying in the port. The health committee recommended to Government that an anti-stegomyia campaign under a specially equipped officer, to be paid by Government, be inaugurated in the port of Calcutta, and that the present mosquito brigade be placed under a trained medical officer on Rs. 200 a month. The corporation adopted the first part of the health committee's recommendation and rejected the second part.

In Madras port also certain precautionary measures have been introduced. Ships arriving from East Africa and other countries where yellow fever is epidemic will be under quarantine when cases of sickness are reported on board, and special mosquito curtains have been furnished to the port health officer, which will be spread in the cabins used by patients in these vessels. In case the patients are brought on shore they will be taken on board ships furnished with special mosquito curtains, and in the general hospital provision has been made for segregating patients in mosquito-proof rooms.

Proposed Veterinary Reserve.

The Government of India Army Veterinary Department has addressed the Bombay Government on the subject of the formation of a Reserve of Civil Veterinary Assistants for duty with Indian Silladar Cavalry regiments during the war. The intention of Government is to establish a Reserve of 14 Civil Veterinary Assistants, and for this purpose Government is desirous of obtaining volunteers from the Civil Veterinary Department who during the present war will sign an agreement to serve for one year, extensible for two, or for such time as the war may last, on the present rate of pay plus 50 per cent. *batta*. They will be employed with regiments of Silladar Cavalry in India and with depôts in India of regiments on field service overseas in their professional capacity only. They will have no military status, but will be under the orders of the officer commanding the regiment or depôt. Whilst in military employ they will also get the same privileges as Silladar Cavalry men as regards rations.

Jan. 1st.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE EXECUTIVE COMMITTEE.

A MEETING of the Executive Committee was held on Thursday, Jan. 20th, when the Secretary reported that he had received no information from the Aide et Protection aux Médecins et Pharmaciens Sinistrés since the end of October, and from other quarters whence communications had been expected nothing had arrived. In the circumstances it was decided to attempt to obtain through the Commission for Relief in Belgium some idea of the actual position of affairs before asking that Commission to help in the transmission of further grants.

The Treasurer submitted the following cash account of the Fund from its commencement up to Nov. 30th, 1915, and it was decided that the second financial year should start on Dec. 1st, 1915:—

Cash Account from Commencement to Nov. 30th, 1915.

Receipts.	£	s.	d.	*Payments.*	£	s.	d.
Donations	18,570	6	10	Relief	2,389	3	11
Bank interest ...	22	6	6	Loans outstanding	103	12	0
				Drugs	249	13	8
				Clothes	191	9	7
				Administration expenses... ...	50	2	2
					2,984	1	4
				Balance at bank—			
				On current account ...	1,108	12	0
				On deposit account ...	14,500	0	0
					15,608	12	0
Total	£18,592	13	4	Total	£18,592	13	4

The cash account has been audited by Messrs. Crewdson, Youatt, and Howard for an entirely nominal fee.

THE WEEK'S SUBSCRIPTIONS.

The subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received during the week have been as follows:—

	£	s.	d.
Prof. Maurice Muret, Lausanne	4	0	0
Dr. G. D. H. Carpenter (ninth donation—total £9)	1	0	0
Northamptonshire Division, B.M.A. (per Dr. S. E. Baxter, Hon. Sec.)—			
Dr. Dudley Greenfield	5	0	0
British Guiana Branch, B.M.A., Members and others (per Dr. S. S. Craig, Hon. Sec.)—			
Dr. von Winckler ...	1	0	0
Dr. Bosse	1	0	0
Dr. Craigen	1	0	0
Dr. Rose	1	0	0
Dr. Carto	1	0	0
Dr. Sharples	1	0	0
Dr. Fiddian	1	0	0
Dr. Craig	1	0	0
Mr. E. W. Walsh	0	10	6

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

A SCHEME FOR THE REDUCTION OF INFANT MORTALITY.

(FROM A CORRESPONDENT.)

THE reader is asked to imagine the existence of a central bureau or association, whose broad object is to reduce the existing infant mortality by a system of vicarious adoption. Each subscriber, say of £1, to this central authority would be allowed to take, without any legal or implied responsibilities, a direct personal interest in a potential baby and an actual baby of the poorer classes. It is true that expectant mothers are not registered compulsorily, but in the absence of a legal enactment it would be quite worth while paying a substantial gratuity to encourage this practice. Born living babies have, of course, to be registered under the existing law.

By "direct personal interest" is not meant necessarily allowing the subscriber to get into personal touch with the expectant mother or the child. The central bureau could, through the medium of the existing local organisations, afford the subscriber monthly *confidential* bulletins in the first instance on the progress of the expectant mother, and, later, on the child born. These bulletins could be made more attractive by photographs, and local photographers would doubtless be found ready to undertake this work at an almost nominal cost. It would be open to the subscriber, if the bulletins proved disquieting, to promise an extra donation, and to urge the central bureau to approach the indicated local organisation and see if a further sum of money could be usefully expended. The bulletins would, of course, arouse feelings of pleasure or regret according to whether they were favourable or unfavourable, but in either case no one having once received them could thereafter ever display indifference to this momentous question of child welfare, and the educational effect of this aroused interest could not fail to have far-reaching effects. Some persons might perhaps prefer to do without bulletins and their subscriptions would be none the less welcome. Others may consider that the babies should be known not by name but by some number. This point may be worth considering, although it rather clashes with the spirit of the proposals. It will be observed that this project fits in with the ideas of those who think ante-natal influences are most important, and of those who belong chiefly to the post-natal school of thought. The subscribers would be largely composed of men medically unfit or too old to fight and of women. It would be a gratifying thought for them that whilst our enemies were engaged on the wholesale destruction of adult male life abroad they (the subscribers) were doing their best to assist in the conservation of the lives of expectant mothers and children at home. How to deal with subscriptions of less than and more than £1 is a matter of detail which need not be considered here.

The central organisation would be composed of voluntary workers with a paid secretarial staff, and would include the names of men and women well known in the medical profession, and of educational and sanitary authorities, while experts in the subject of infant welfare would naturally be represented upon it. Its duties would be to bring the subscriber into intimate touch with the problems of infant life, and far from interfering with existing organisations it would assist them pecuniarily and in every other possible way. In return it would ask the existing organisations to afford such facilities as would enable the central association, and through it the subscribers, to be placed in the closest possible touch with babies born or about to be born. This might, and indeed would, prove a difficult task, but it is not insurmountable.

If the movement were a comprehensive one and tactfully conducted the allegiance of expectant and actual mothers would probably not be found wanting, both on the grounds of personal interest and also of humanity. Already the poorer classes have largely ceased to look with distrust on the medical officer of health and sanitary inspectors and visitors owing to the patient tact exercised by these officials and the growing knowledge of the value of their work.

I may give an imaginary case as an illustration. A reader knows, say, a medical officer of health, and writes to him as follows:—

> I enclose you a cheque to be expended on infant welfare, as I know this is a subject in which you are specially interested. You may spend the money in paying the doctor's, midwife's or nurse's fees, or providing better food for the mothers or children, or for subscribing to lying-in hospitals, or crèches, or pure milk depôts, or in any other way you think fit. In return, I should like to keep my interest in the subject alive by focussing my thoughts on a particular baby. Would you be so good as to choose one, and keep me informed as to its progress month by month for a year, when I shall have much pleasure in renewing my cheque?

It would surely not be impossible for that medical officer of health to spend the money usefully, or to furnish the donor with the information required. This is a purely imaginary case, and must not be taken as meaning that the medical officer of health is necessarily the person to be chosen as agent to distribute the money or the information. But the example will have served its purpose if it induces the reader to pause before passing final judgment on the practicability of the scheme.

Many may find it undesirable for the public to be mixed up in these matters, and will say that if more money is required the State, county councils, and local authorities should supply and disburse it. I am trying to deal with facts as they are now, and it is quite conceivable that the educational aspect of the scheme might interest so many individuals that it would in time provide the lever required to induce the State to take further organised efforts for the reduction of infant mortality.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet:—Andrew Carey McAllister (dated Jan. 18th) and William Ernest Wade and Harold Ellis (dated Jan. 20th).

The following appointments have been notified: Fleet-Surgeons: E. H. Meaden to the *Vivid*; P. H. Bannister to the *Victory*; and L. E. Dartnell to the *Impregnable*. Staff-Surgeons: J. O'Hea to the *Cumberland*; W. L. Hawkins to the *President*, additional; and W. E. Gribbell to the *Vivid*, additional. Temporary Surgeon: G. W. King to the *Vivid*, additional.

ARMY MEDICAL SERVICE.

Colonel George D. Hunter, D.S.O., to be temporary Surgeon-General, whilst a Director of Medical Services (dated Dec. 23rd).

ROYAL ARMY MEDICAL CORPS.

The undermentioned Majors to be temporary Lieutenant-Colonels whilst in command of Field Ambulances: Dated August 15th: Patrick J. Hanafin. Dated Dec. 7th: Edward H. M. Moore.

Daniel Robert O'Sullivan-Beare to be temporary Lieutenant-Colonel (dated Jan. 1st).

The undermentioned temporary Lieutenants to be temporary Captains:—

Dated August 8th: James La F. Lauder.
Dated Sept 13th: Wilfred Parsons, late Lieutenant.
Dated Nov. 11th: Andrew Gilmour.

Dated Dec. 6th: Ernest L. Shelton-Jones.
Dated Dec. 16th: John W. Grice.
Dated Dec. 20th: Alexander E. A. Burkhard.
Dated Dec. 21st: Robert P. McDonnell.
Dated Dec. 28th: Henry W. Turner.
Dated Jan. 1st: William H. Clements, James D. Driberg, and Ernest L. M. Hackett.
Dated Jan. 2nd: Conwy L. Morgan.
Dated Jan. 3rd: Norman P. L. Lumb and Dawson C. Robertson.
Dated Jan. 4th: Ralph A. Hughes and Arthur H. Greg.
Dated Jan. 5th: James E. Rutherford.
Dated Jan. 7th: Andrew Grant, George D. Sherwood, Albert E. Hodgson, John Lang, Harold B. Day, Thomas B. Marshall, Daniel Brough, Thomas L. Butler, George F. Darker, and Howard G. Pesel.
Dated Jan. 8th: Henry P. Harpur and James Fettes.
Dated Jan. 9th: Robert C. Leonard and Bernard C. Tennent.
Dated Jan. 10th: William E. David and Walter T. James.
Dated Jan. 11th: David Heron.
Dated Jan. 12th: Humphrey R. Pollock, Bernard E. Wall, Finbar J. Hunt, Albert Jones, Robertson Y. Stones, George O. Maw, and Robert F. Jones.
Dated Jan. 14th: Arthur Hines.

The undermentioned to be temporary Captains:—
Dated Sept. 25th: William Burrough Cosens.
Dated Dec. 30th: Major Edward Provan Cathcart, from the Unattached List of the Territorial Force.
Dated Jan. 1st: Morgan James Rees.
Dated Jan. 3rd: Francis Arthur Bainbridge.

H. K. Neilson, C.A.M.C., to be temporary Captain (dated Dec. 11th).

The undermentioned Lieutenants, C.A.M.C., to be temporary Lieutenants:—
Dated Dec. 22nd: Richard Proctor and Gordon Stuart Clancy.

The undermentioned to be temporary Lieutenants:—
Dated Dec. 31st: Horace Simeon Berry and Geoffrey Collins.
Dated Jan. 1st: John Beatson Dunning, Joseph Alexander Thomson, Francis Baldwin Pinniger, James Rynd Briscoe, Anson Robertson Jordan, Richard Locke Bell, George Bertram Spencer Soper, James Dunbar, George Sutherland, Frederick Lionel Spalding, Victor Stanley Partridge, Paul de Cressé Potter, Harry Bond, Walter Richard Hugh Smith, Robert Daniels Bell, James William Hugh Boyd, Henry Speirs, Archibald Lumsdaine Pentland-Smith, William Alexander Cochrane, Harold Arthur Robert Edmond Unwin, William Henry Gray, David Marcus Hanson, William Gibson Parker, Herbert Child, Robert Hubert William Garle, John Rowland Payne, Samuel McComb, John Stafford Johnson, Harry Farncombe, Alexander Stewart, Percy Booth Harrison, David Manson, James Massey, John Baird Cunningham, Arthur Randell Jackson, Michael Joseph Harkin, Alexander Mennie Mitchell, John Edward Joseph Roche Kelly, Arthur Murray Masters, John Ernest Ruck, Robert John Mayberry, Bertie Cecil Eskell, Austin Clarence Dixon, Francis George Heard, James Dennis Mercer, David Lindley Sewell, Howard Barclay Billups, John Howard Addinsell, John Beaufoy Randall, Wathen Ernest Waller, Edgar Douglas Adrian, William Aubrey Layard Marriott, Bernard Francis Bailey, Charles Edward Iles, Percy Ward Brigstocke, John Bradbury Alexander, David Alexander Thomson, Thomas Weir McCubbin, Harold Edward Battle, John Munro Gage, Alan William Stuart Sichel, Joseph Herbert Patrick Boyd Barrett, Arthur Brebner, Francis Brett Young, Jacobus Philip Ziervogel, Edward Dance Fountain, Arthur Alvin Martin, James Phillips Jones, John Richard Griffith, Henry Quintin Osburne Wheeler, Arthur Edward Atkinson, and Henry Tonks.
Dated Jan. 2nd: Bernard Charles William Pasco and Cecil Ernest Jones-Phillipson.
Dated Jan. 3rd: Claude Christian Hargreaves, Frederick John Chanter Blackmore, John Bryan, James Joseph Healy, John Magnus Redding, William Stocks Lacey, Mackenzie Douglas, John Watt, Alexander James Anderson, Thomas Tierney, and Gilbert Alfred Back.
Dated Jan. 4th: Oscar Le Feure Milburn, Burden Cox, James Charles Buckley, John Sadler Curgenven, Maurice Nicoll, and James Russell Magee.
Dated Jan. 5th: Robert Rowlands, Soloman Harold Richards, William Vernon Pegler, Tom Bates, William Faulkner Valentine Simpson, Anthony Feiling, and Charles Ernest Lewis Burman.
Dated Jan. 6th: Edward Evans and John Frederick Gallaher.

The undermentioned to be temporary Honorary Lieutenants:—
Dated Jan. 5th: William Ronald White-Cooper, John Gordon Ackland, and John Edward Carbery Maguire.
Dated Jan. 10th: Stanley Walter Isaacs.

Oswald Gayer Morgan to be temporary Honorary Lieutenant whilst serving with No. 9 British Red Cross (Duchess of Sutherland's) Hospital (dated Nov. 29th).

Temporary Captain Charles J. Edgar relinquishes his commission (dated Jan. 20th).

The undermentioned temporary Lieutenants relinquish their commissions:—
Dated Dec. 28th: Peter Reid.
Dated Jan. 2nd: Patrick J. Maguire and John D. Cherry.
Dated Jan. 6th: Charles E. Pepper.
Dated Jan. 7th: John L. Annan, Wilfred Garton, Herbert E. Clarke, and Robert W. Greatorex.
Dated Jan. 10th: Robert K. Nisbett.
Dated Jan. 26th: Arthur N. Houghton.

The appointment to a temporary Lieutenancy of Alexander G. Waddell is antedated to August 14th, 1915.

Royal Malta Artillery.

Surgeon-Major Alfred E. Mifsud is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion (dated Jan. 10th).

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants to be Captains: Eric Jamieson, William McE. Snodgrass, and John G. Hendry.

Lieutenant (on probation) Thomas R. Davies is confirmed in his rank.

Lieutenant Andrew C. Cassells is placed temporarily on retired pay on account of ill-health.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Lowland Mounted Brigade Field Ambulance: Captain (temporary Major) Farquhar Gracie to be Major.

South Wales Mounted Brigade Field Ambulance; Lieutenant (temporary Captain) Josiah Browne to be Captain.

Highland Field Ambulance: Bernard Langridge Davis to be Lieutenant.

London (City of London) Field Ambulance: Major (temporary Lieutenant-Colonel) William V. Sinclair relinquishes the temporary rank of Lieutenant-Colonel on alteration in posting. Major Edwin C. Montgomery-Smith to be temporary Lieutenant-Colonel.

North Midland Field Ambulance: James Davison Allen (late Captain in this Unit) to be Captain.

Northumbrian Field Ambulance: Lieutenant Andrew Govan McFarlane to be Captain.

West Riding Field Ambulance: To be Captains: Lieutenant Charles S. Brown and Lieutenant Thomas Ingham Mills.

The undermentioned Lieutenants to be Captains: Alfred George Hebblethwaite and Alexander Anderson. Lieutenant William Sneddon to be Captain.

London Sanitary Company: Harold Vickers to be Lieutenant.

London Casualty Clearing Station: Frederick Adolph Dick to be Lieutenant.

Highland Mounted Brigade Field Ambulance: Lieutenant John Frederick Neary to be Captain.

London Field Ambulance: Major Henry K. Dawson to be temporary Lieutenant-Colonel.

Southern General Hospital: Captain John Blackwood is seconded for duty with East Anglian Field Ambulance.

Scottish Horse Mounted Brigade Field Ambulance: Lieutenant Francis M. Halley to be Captain.

East Lancashire Field Ambulance: To be Captains: Lieutenant Arthur W. Havard and Lieutenant Ernest L. Forward. John Radcliffe Jagger to be Lieutenant.

London General Hospital: The undermentioned to be Lieutenants: Douglas Noel Hardcastle, Albert William Bowie, Louis Abel Célestin, Walter Leopold Holyoak, and Arthur Kingsford.

North Midland Mounted Brigade Field Ambulance: Lieutenant Herbert W. Greig to be Captain.

South-Eastern Mounted Brigade Field Ambulance: Lieutenant William Tresawna to be Captain.

Attached to Units other than Medical Units.—Major Alfred Robinson and Captain George B. Forge relinquish their commissions on account of ill-health. The resignation of Captain William L. Griffiths is cancelled. John Armstrong Hartley to be Lieutenant.

THE NAVAL MEDICAL COMPASSIONATE FUND.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on Jan. 18th, Sir Arthur W. May, K.C.B., in the chair, the sum of £40 was distributed among the several applicants.

COLONIAL MEDICAL SERVICES.

West African Medical Staff.—Mr. T. E. Rice, Principal Medical Officer, Sierra Leone, has been appointed Principal Medical Officer on the Gold Coast. Mr. E. H. Tweedy, Deputy Principal Medical Officer, Gold Coast, has been promoted Principal Medical Officer, Sierra Leone, Mr. C. F.

Watson, Provincial Medical Officer, Nigeria (Northern Provinces), has been promoted Deputy Principal Medical Officer, Gold Coast, and Dr. G. B. Norman, Medical Officer, Nigeria (Northern Provinces), has been promoted Senior Medical Officer. Dr. F. G. Hopkins, Principal Medical Officer, Gold Coast, has retired on pension, and Dr. C. R. Patton, Medical Officer, Gold Coast, has retired with a gratuity. Dr. D. T. Birt has returned to the Staff from temporary employment as Lieutenant in the Royal Army Medical Corps. Mr. M. B. Hay and Dr. J. C. Watt have returned to the Staff from temporary employment as Surgeons in the Royal Navy. Mr. W. A. Trumper and Dr. J. Lindsay, who were taken prisoners by the Germans at Garua, Northern Cameroons, on August 29th, 1914, were released by a British force on Jan. 8th, 1916. Mr. R. H. Miller, Medical Officer, Gambia, has been seconded for service as Medical Officer in Somaliland.

Other Colonies and Protectorates.—Dr. N. P. Jewell, lately Assistant Medical Officer, Seychelles, has been appointed Medical Officer, East Africa Protectorate, and Mr. A. L. Murison and Lieutenant-Colonel R. H. Whitwell, I.M.S. (retired), District Medical Officers at Cyprus.

VITAL STATISTICS.

VITAL STATISTICS FOR 1915.

THE following statement shows the birth- and death-rates and the rates of infant mortality in England and Wales, and in certain parts of the country during the year 1915, the figures being provisional:—

—	Annual rate per 1000 living*			Deaths under one year per 1000 births.
	Births.	Deaths.		
		Crude.	Standardised.†	
England and Wales	21·9	15·1	14·8	110
96 great towns, including London	22·8	15·6	15·9	117
148 smaller towns	21·6	14·0	14·2	114
England and Wales, less the 244 towns	20·7	14·8	13·6	98
London	22·6	16·1	16·1	112

* Populations in the middle of 1914, estimated by the method described in the Registrar-General's Annual Report for 1907, have been used in the calculation of these rates, no reliable estimates of population in the middle of 1915 being available.

† The standardised death-rates are the rates which would have been recorded had the sex- and age-constitution of the populations of the several areas been identical with that of the population of England and Wales as enumerated in 1901. A description of the method of standardising these death-rates will be found in the Annual Report for 1911, p. xxix.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7574 births and 4935 deaths were registered during the week ended Saturday, Jan. 22nd. The annual rate of mortality in these towns, which had been 16·6, 14·3, and 13·9 per 1000 in the three preceding weeks, rose in the week under notice to 14·2 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of the year 1914. Among the several towns the death-rates ranged from 5·9 in Swindon, 7·2 in Wallasey, 8·1 in Ealing, 8·4 in Warrington, and 8·5 in Enfield, to 21·0 in West Bromwich, 21·4 in Exeter and in Bootle, 22·0 in Bury, and 25·9 in Ipswich.

The 4935 deaths from all causes were 85 in excess of the number in the previous week, and included 305 which were referred to the principal epidemic diseases, against 312 and 329 in the two preceding weeks. Of these 305 deaths, 79 resulted from diphtheria, 74 from whooping-cough, 73 from measles, 60 from infantile diarrhœal diseases, 10 from scarlet fever, and 9 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·9, or 0·1 per 1000 less than in the previous week. The deaths attributed to diphtheria, which had been 79, 61, and 84 in the three preceding weeks, fell to 79, and included 16 in London, 4 in Liverpool, and 3 each in Birmingham, Burnley, Huddersfield, and Bradford. The fatal cases of whooping-cough, which had been 60, 57, and 78 in the three preceding weeks, fell to 74, of which 16 occurred in London, 5 each in West Ham, Birmingham, and Manchester, 4 each in Liverpool and Middlesbrough, and 5 in Sheffield. The deaths referred to measles, which had been 100, 81, and 75 in the three preceding weeks, further fell to 73; the highest annual death-rates from this cause were 1·7 in Bristol, 2·8 in Eastbourne, 2·9 in Leicester. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 80, 73, and 60 in the three preceding weeks, were again 60 in the week under notice, and included 15 in London, 4 each in Birmingham and Manchester, and 3 each in Sheffield and South Shields. The deaths attributed to scarlet fever, which had been 22, 30, and 23 in the three preceding weeks, fell to 10, of which 2 were registered in Birmingham. The fatal cases of enteric fever numbered 9, against 14, 10, and 9 in the three preceding weeks, and included 2 each in London and Reading.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2464, 2325, and 2224 at the end of the three preceding weeks, rose to 2257 on Saturday last; 286 new cases were admitted during the week, against 254, 225, and 244 in the three preceding weeks. These hospitals also contained on Saturday last 1484 cases of diphtheria, 77 of whooping-cough, 61 of measles, and 59 of enteric fever, but not one of small-pox. The 1167 deaths from all causes in London exceeded the number registered in the previous week by 8, and corresponded to an annual death-rate of 13·5 per 1000. The deaths referred to diseases of the respiratory system, which had been 346, 245, and 264 in the three preceding weeks, fell to 254 in the week under notice, and were 263 below the number recorded in the corresponding week of last year.

Of the 4935 deaths from all causes in the 96 towns, 191 resulted from different forms of violence and 407 were the subject of coroners' inquests, while 1367 occurred in public institutions. The causes of 51, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Hull, and in 71 other smaller towns. Of the 51 uncertified causes, 9 were registered in Liverpool, 9 in Birmingham, 5 in Bootle, 4 each in Leicester, Barrow-in-Furness, and Gateshead, and 2 each in Southend-on-Sea, Manchester, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,355,300 persons at the middle of this year, 1042 births and 649 deaths were registered during the week ended Saturday, Jan. 22nd. The annual rate of mortality in these towns, which had been 17·4, 15·9, and 15·4 per 1000 in the three preceding weeks, further fell to 14·4 per 1000 in the week under notice. Among the several towns it ranged from 8·7 in Motherwell, 9·3 in Hamilton, and 9·5 in Leith, to 18·0 in Aberdeen, 21·0 in Kilmarnock, and 21·5 in Perth.

The 649 deaths from all causes were 47 fewer than the number in the previous week, and included 43 which were referred to the principal epidemic diseases, against 72 and 66 in the two preceding weeks. Of these 43 deaths, 19 resulted from measles, 9 from scarlet fever, 8 from diphtheria, 4 from infantile diarrhœal diseases, 2 from whooping-cough, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·0, against 0·9 per 1000 in the large English towns. The deaths attributed to measles, which had been 26, 17, and 23 in the three preceding weeks, fell to 19, and included 5 in Glasgow, 4 in Coatbridge, and 2 in Motherwell. The deaths referred to scarlet fever, which had been 21, 18, and 11 in the three preceding weeks, further fell to 9, of which 4 occurred in Glasgow and 2 in Aberdeen. The fatal cases of diphtheria, which had been 11, 19, and 13 in the three preceding weeks, fell to 8, and included 5 in Glasgow. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 11, 10, and 13 in the three preceding weeks, fell to 4, and comprised 3 in Glasgow and 1 in Perth. The fatal cases of whooping-cough were registered in Glasgow and Edinburgh, and that of enteric fever in Glasgow.

The deaths referred to diseases of the respiratory system, which had steadily declined from 322 to 114 in the eight preceding weeks, further fell to 92 in the week under notice, and were 146 below the number registered in the corresponding week of last year. The deaths from violence numbered 37, against 42 and 33 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland, with populations exceeding 10,000 persons at the last Census, 584 births and 383 deaths were registered during the week ended Saturday, Jan. 15th. The annual rate of mortality in these towns, which had been 17·3, 24·2, and 21·0 per 1000 in the three

preceding weeks, fell in the week under notice to 17·4 per 1000 of their aggregate population estimated at 1,148,468 persons at the middle of last year. During the week the death-rate was equal to 18·2 in Dublin (against 13·4 in London and 14·5 in Glasgow), 16·0 in Belfast, 17·0 in Cork, 24·0 in Londonderry, 21·7 in Limerick, and 13·3 in Waterford, while in the 13 smaller towns the mean death-rate was 16·7 per 1000.

The 383 deaths from all causes were 80 below the number recorded in the previous week, and included 30 which were referred to the principal epidemic diseases, against 59 and 29 in the two preceding weeks. Of these 30 deaths, 14 resulted from measles, 6 from infantile diarrhœal diseases, 5 from whooping-cough, 2 each from scarlet fever and enteric fever, and 1 from diphtheria, but not one from small-pox. The annual death-rate from these diseases was equal to 1·4, against corresponding rates of 1·0 and 1·5 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 19, 22, and 9 in the three preceding weeks, rose to 14, and comprised 7 in Belfast, 6 in Dublin, and 1 in Newry. The deaths from diarrhœa and enteritis, (among infants under 2 years), which had been 8, 9, and 8 in the three preceding weeks, fell to 6, of which 3 were registered in Dublin. The 5 fatal cases of whooping-cough were 2 below the average in the three preceding weeks, and included 2 in Dublin. The deaths from scarlet fever were recorded in Cork and Londonderry, and those from enteric fever in Dublin and Limerick, while the fatal case of diphtheria occurred in Cork.

The deaths referred to diseases of the respiratory system, which had been 92, 147, and 114 in the three preceding weeks, further declined to 87 in the week under notice, and were 73 below the number registered in the corresponding week of last year. Of the 383 deaths from all causes, 113, or 29 per cent., occurred in public institutions, and 6 resulted from violence. The causes of 15, or 3·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 5 in Sligo, 4 in Dublin, and 2 in Londonderry; in the large English towns the proportion of uncertified causes did not exceed 0·8 per cent.

In the 19 town districts of Ireland 562 births and 395 deaths were registered during the week ended Saturday, Jan. 22nd. The annual rate of mortality in these towns, which had been 24·2, 21·0, and 17·4 per 1000 in the three preceding weeks, rose to 17·9 per 1000 in the week under notice. The rate was equal to 18·5 in Dublin (against 13·5 in London and 14·1 in Glasgow), 14·6 in Belfast, 25·8 in Cork, 17·7 in Londonderry, 19·0 in Limerick, and 32·3 in Waterford, while in the 13 smaller towns the mean rate was 18·4 per 1000.

The 395 deaths from all causes were 12 in excess of the number in the previous week, and included 32 which were referred to the principal epidemic diseases against 29 and 30 in the two preceding weeks. Of these 32 deaths, 9 resulted from measles, 8 each from whooping-cough and infantile diarrhœal diseases, 3 each from scarlet fever and diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·5, against corresponding rates of 0·9 and 1·0 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 22, 9, and 14 in the three preceding weeks, fell to 9, and comprised 6 in Dublin and 3 in Belfast. The deaths referred to whooping-cough, which had been 12, 4, and 5 in the three preceding weeks, rose to 8, of which 5 were registered in Belfast. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 9, 8, and 6 in the three preceding weeks, rose to 8, and included 4 in Belfast, and 2 in Cork. Of the 3 fatal cases of scarlet fever 2 occurred in Belfast and 1 in Dublin; of those from diphtheria, 2 in Dublin and 1 in Cork, and that of enteric fever in Drogheda.

The deaths referred to diseases of the respiratory system, which had been 147, 114, and 87 in the three preceding weeks, further fell to 63 in the week under notice, and were 71 below the number registered in the corresponding week of last year. Of the 395 deaths from all causes, 140, or 35 per cent., occurred in public institutions, and 7 resulted from violence. The causes of 12, or 3·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 4 in Dublin and 2 each in Belfast and Limerick; in the large English towns the proportion of uncertified causes did not exceed 1·0 per cent.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1915.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 6·3 per 1000 of the population, estimated at 4,516,612 persons; in the three preceding months the rates were 8·1, 9·6, and 7·8 per 1000 respectively. The lowest rates last month were recorded in Kensington, Chelsea, the City of Westminster, St. Marylebone, and Hampstead; and the highest rates in Stoke Newington, Shoreditch, Bethnal Green, Stepney, and Greenwich. The prevalence of scarlet fever showed a considerable decline from that recorded in other recent months; among the several metropolitan boroughs this disease was proportionally most prevalent in St. Pancras, Islington, Hackney, Stepney, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 2431 scarlet fever patients at the end of December, against 2732, 3072, and 2896 at the end of the three preceding months; the weekly admissions averaged 248, against 381, 434, and 329 in the three preceding months. Diphtheria was less prevalent than it had been in any of the three preceding months, the greatest proportional prevalence of this disease was recorded last month in Stoke Newington, Hackney, Shoreditch, Bethnal Green, Stepney, Southwark, Wandsworth, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1418, 1620, and 1551 at the end of the three preceding months, had declined to 1476 at the end of last month; the weekly admissions averaged 177, against 213, 241, and 195 in the three preceding months. The prevalence of enteric fever showed a slight decline compared with that in the four preceding months; this disease was proportionally most prevalent last month in Paddington, Hammersmith, Hampstead, Shoreditch, and Greenwich. There were 50 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 47, 49, and 57 at the end of the three preceding months; the weekly admissions averaged 7, against 9 and 7 in the two preceding months. Erysipelas was proportionally most prevalent in Stoke Newington, Shoreditch, Bethnal Green, Southwark, Deptford, and Woolwich. The 24 cases of puerperal fever notified during the month included 5 in Lambeth and 2 each in the City of Westminster, Islington, Shoreditch, Poplar, and Southwark. The 26 cases of cerebro-spinal meningitis included 4 in Hackney, 4 in Shoreditch, 3 in Islington, 3 in Stepney, and 2 each in the City of Westminster, Southwark, and Bermondsey; of the 5 cases notified as poliomyelitis, 2 belonged to St. Pancras, 2 to Wandsworth, and 1 to Lambeth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitutions of the populations of the several boroughs. During the five weeks ending Jan. 1st the deaths of 7511 London residents were registered, equal to an annual rate of 17·3 per 1000; in the three preceding months the rates had been 14·0, 14·6, and 16·2 per 1000. The death-rates last month ranged from 13·2 in Lewisham, 13·3 in Hampstead, 13·7 in Wandsworth, 15·0 in Camberwell, and 15·5 in Hackney, to 19·5 in Deptford, 19·7 in Holborn, 19·8 in Greenwich, 20·2 in Poplar, 20·4 in Finsbury, 22·2 in Shoreditch, and 24·5 in Southwark. The 7511 deaths from all causes included 367, which were referred to the principal infectious diseases; of these, 50 resulted from measles, 25 from scarlet fever, 88 from diphtheria, 77 from whooping-cough, 8 from enteric fever, and 119 from diarrhœa and enteritis among children under 2 years of age. The 50 deaths from measles were less than one-quarter of the corrected average number; the greatest proportional mortality from this disease was recorded in Holborn, Finsbury, Stepney, Southwark, and Greenwich. The 25 fatal cases of scarlet fever were 4 in excess of the corrected average number, and included 6 in Islington, 3 in Wandsworth, and 2 each in Paddington, St. Pancras, Southwark, Bermondsey, and Camberwell. The 88 deaths from diphtheria were 23 above the average number, the highest death-rates from this disease being recorded in Stoke Newington, Shoreditch, Bethnal Green, Stepney, and Bermondsey. The 77 fatal cases of whooping-cough were 24 in excess of the corrected average number; the greatest proportional mortality from this disease occurring in Hammersmith, Chelsea, Stepney, Poplar, and Lewisham. The 8 deaths from enteric fever were 7 below the corrected average number, and included 1 each in Hammersmith, Fulham, Hampstead, St. Pancras, Stepney, Battersea, Wandsworth, and Woolwich. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Paddington, the City of Westminster, Holborn, Finsbury, and Shoreditch. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases, excluding diarrhœa, was 33·9 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1915.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1914.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,516,612**	—	**1304**	**932**	—	**51**	**1**	**24**	**392**	**26**	**5**	**2735**	**6·3**	—	**50**	**25**	**88**	**77**	**8**	**119**	**367**	**0·8**	**7511**	**17·3**
West Districts.																								
Paddington	142,065	—	42	22	—	5	—	—	15	—	—	84	6·2	—	—	2	—	2	—	8	12	0·9	223	16·3
Kensington	170,817	—	21	21	—	1	—	—	9	1	—	53	3·2	—	—	—	—	2	—	4	6	0·4	272	16·5
Hammersmith	124,750	—	29	15	—	3	—	1	15	—	—	63	5·3	—	—	—	1	2	1	3	7	0·6	205	16·9
Fulham	158,849	—	45	36	—	1	—	1	9	1	—	93	6·1	—	—	—	4	4	1	2	11	0·7	233	15·8
Chelsea	63,791	—	10	13	—	1	—	—	3	—	—	27	4·4	—	—	—	1	3	—	—	4	0·7	124	19·3
City of Westminster	152,346	—	26	13	—	—	—	2	6	2	—	49	3·4	—	1	—	2	2	—	7	12	0·8	221	15·9
North Districts.																								
St. Marylebone	112,892	—	11	13	—	—	—	—	3	—	—	27	2·5	—	—	1	1	2	—	4	7	0·6	192	18·1
Hampstead	86,731	—	14	13	—	2	—	—	6	—	—	35	4·2	—	1	—	2	—	1	—	4	0·5	105	13·3
St. Pancras	212,497	—	85	48	—	1	—	1	13	1	2	151	7·4	—	1	2	2	3	1	5	14	0·7	359	17·5
Islington	324,764	—	135	57	—	1	—	2	23	3	—	221	7·1	—	3	6	5	6	—	8	28	0·9	568	17·7
Stoke Newington	50,454	—	17	21	—	—	—	—	8	—	—	46	9·5	—	—	1	7	1	—	—	9	1·9	94	18·5
Hackney	223,724	—	91	55	—	1	—	—	19	4	—	170	7·9	—	—	1	6	2	—	5	14	0·7	331	15·5
Central Districts.																								
Holborn	45,861	—	14	5	—	1	—	1	3	1	—	25	5·7	—	3	—	—	—	—	2	5	1·1	86	19·7
Finsbury	83,212	—	24	11	—	—	—	—	5	—	—	40	5·0	—	15	1	1	—	—	4	21	2·6	164	20·4
City of London	17,129	—	5	2	—	1	—	—	—	—	—	8	4·9	—	—	—	—	1	—	—	1	0·6	25	15·8
East Districts.																								
Shoreditch	108,869	—	28	32	—	9	1	2	22	4	—	98	9·4	—	—	—	3	1	—	7	11	1·1	224	22·2
Bethnal Green	127,662	—	39	49	—	—	—	1	19	—	—	108	8·8	—	1	1	7	1	—	4	14	1·1	195	16·5
Stepney	273,265	—	121	78	—	5	—	1	21	3	—	229	8·7	—	6	1	13	9	1	5	35	1·3	481	19·2
Poplar	160,222	—	32	20	—	—	—	2	19	1	—	74	4·8	—	1	—	1	10	—	6	18	1·2	313	20·2
South Districts.																								
Southwark	186,941	—	36	55	—	1	—	2	29	2	—	125	7·0	—	9	2	4	4	—	6	25	1·4	438	24·5
Bermondsey	124,213	—	24	26	—	1	—	—	13	2	—	66	5·5	—	—	2	6	1	—	2	11	0·9	227	19·1
Lambeth	296,724	—	63	39	—	4	—	5	15	—	1	127	4·5	—	2	—	5	5	—	10	22	0·8	493	17·0
Battersea	167,338	—	51	37	—	3	—	1	14	—	—	106	6·6	—	2	—	2	2	1	3	10	0·6	275	17·3
Wandsworth	338,998	—	113	107	—	4	—	1	14	—	2	241	7·4	—	1	3	7	6	1	8	26	0·8	443	13·7
Camberwell	262,020	—	59	46	—	—	—	—	26	—	—	131	5·2	—	1	2	4	1	—	9	17	0·7	383	15·0
Deptford	109,182	—	43	21	—	—	—	—	21	1	—	86	8·2	—	1	—	1	1	—	3	6	0·6	206	19·5
Greenwich	96,037	—	44	22	—	4	—	1	8	—	—	79	8·6	—	2	—	1	—	—	1	4	0·4	185	19·8
Lewisham	172,433	—	45	21	—	1	—	—	17	—	—	84	5·1	—	—	—	2	5	—	2	9	0·5	222	13·2
Woolwich	122,836	—	37	34	—	—	—	—	17	—	—	88	7·5	—	—	1	—	1	1	1	4	0·3	224	19·5
Port of London	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex and age constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

Correspondence.

"Audi alteram partem."

THE HISTORY OF CLINICAL THERMOMETRY.

To the Editor of THE LANCET.

SIR,—I have been reading the interesting history of the rise of clinical thermometry in this country given by Professor Sims Woodhead and Dr. Varrier-Jones in your issue of Jan. 22nd. It can be seen that the clinical thermometer came into use in the hospitals, at any rate, in the years 1868 and 1869, largely in consequence of the firms of Harvey and Reynolds, of Leeds, and Hawksley, of London, supplying a registering thermometer which could be conveniently carried in the pocket. But Professor Woodhead is, unfortunately, led to throw a doubt upon the prevalence of its use even a year later in consequence of some remarks made by the late Sir Samuel Wilks in his "Biographical Reminiscences" and of a story Sir Samuel Wilks tells elsewhere in 1903. Readers would almost naturally infer that at Guy's Hospital the only thermometer to be obtained in 1870 was one a foot long, and that it was a great curiosity. Professor Woodhead and Dr. Varrier-Jones have not given the story quite accurately. They say he (meaning Sir Samuel Wilks) states that—In 1870 he "requested the superintendent at Guy's to procure a clinical thermometer ....." The only writing of Sir Samuel Wilks on this subject that I can find in 1903 is in the *British Medical Journal*, vol. i., pp. 1058–59; but there is no reference to 1870 at all in any part of it. Sir Samuel Wilks says:—

> I believe that we are indebted to Wunderlich for the first account of its value and systematic use, and this is to be found in the *Medical Times and Gazette* for 1858. About the same time Dr. Aitken, of Netley, published a *Practice of Medicine*, and in it the value of the thermometer both in diagnosis and prognosis as well as in treatment, is duly set forth in accordance with the researches of Wunderlich. I believe this chapter, the first that appeared in any treatise on medicine, caused the new method of taking the temperature to be widely known. At all events, it was from the knowledge therein obtained that I requested the superintendent at Guy's to procure a clinical thermometer. This he did; it was at the service of anyone who might wish to make use of it. I think it was nearly a foot long, and was so great a novelty that it was taken to a South-Eastern Meeting of the British Medical Association for exhibition, where the members regarded it with much curiosity and interest, although, I am sorry to say, one or two with ridicule.

Aitken's first edition was published in 1858, and contains no reference to Wunderlich's work. This, however, comes in the second edition, dated 1863; and the third edition, in 1864, figures two thermometers, half the actual size, made by Casella. One was straight, apparently 10 inches long, and had an index; the other had no index, and was curved at the bulb end like a catheter, with the idea that when placed in the axilla the free end of the mercury would be more easily seen.

I have no doubt that it was about this time that Sir Samuel Wilks asked the superintendent to procure him a thermometer; and that one of these was the instrument shown by him at the South-Eastern meeting.

I remember, indeed, that in 1867 there were, and how long before that I do not know, a pair of clinical thermometers kept in the clinical wards for use in special cases, corresponding to the description of Casella's instruments given by Aitken.

Professor Woodhead and Dr. Varrier-Jones have placed the words "it was at the service of anyone who might wish to make use of it" after the word "ridicule," though in separate quotation marks. In this position they are meaningless; or if they have any meaning at all they suggest that Sir Samuel Wilks offered the instrument to any member at the meeting. But what they obviously mean, in their proper place, is this: that the instrument was bought by the hospital for the use of any member of the staff, or even student, in a suitable case, at a time when small inexpensive thermometers were not then in the market or accessible to students.

A possible explanation of the use of the date 1870 against the quotation is that Sir Samuel Wilks, in the "Biographical Reminiscences," p. 143, refers again to the long instrument and the medical society when speaking of the Guy's Hospital Reports of 1870. The paragraph begins "Vol. 15, 1870." And then after referring to Sir James Goodhart's paper on the clinical thermometer Sir Samuel Wilks remarks:—

> At that time the instrument had not come into general use, and was looked upon as a curiosity. It was of great length, and was shown at a medical society as the new medical discovery, but of very great importance.

I cannot help thinking that this particular reminiscence was a little faulty, and that Sir Samuel Wilks then attributed to the year 1870 what had really taken place some time before. The book was published in 1911, the year in which he died at the age of 87; and I would rather believe in such a lapse or confusion of memory, than I would imagine that in 1870 he knew nothing of the temperatures, which were being taken, and had been taken in his wards, for 18 months or two years previously by house physicians and others. Certain it is that the instrument was coming into general use in 1868 and 1869, at any rate in the hospitals, as can be seen by consulting the three medical journals of that period.

In the introduction to Sir James Goodhart's paper in the Guy's Hospital Reports the Editors, Dr. Hilton Fagge and Mr. Arthur Durham say:—

> Since the introduction of the thermometer as a clinical instrument regular thermometric observations have been made at Guy's Hospital in a large proportion of the cases of febrile disease that have been admitted into the wards.

Nearly all the cases recorded in this paper by Sir James Goodhart occurred in 1869. I was house surgeon and house physician at Guy's Hospital in that year; and I know that I bought three of Harvey and Reynolds' thermometers in the 12 months, the second probably because I broke the first, and the third because I broke the second. Temperatures were being taken freely by the resident officers there, and I do not suppose for a moment that those officiating at other hospitals in London or the country were any less keen or diligent. I must apologise for the length of this letter, but I do not see how otherwise I could prevent the inferences which might be wrongly drawn as to the position of clinical thermometry at Guy's Hospital, and, indeed, elsewhere over the country.

I am, Sir, yours faithfully,

FREDERICK TAYLOR.

Wimpole-street, W., Jan. 25th, 1916.

FUNCTIONAL NERVOUS DISEASE.

To the Editor of THE LANCET.

SIR,—May I be allowed to make two remarks with regard to the criticism of psycho-analysis which has been appearing in your pages under the above heading? The term psycho-analysis is used in two senses, either as denoting a special *method* of investigating the mental make-up of a patient, or as the name of a particular *theory* as to the etiology of the neuroses and of the psycho-neuroses. In the latter sense we have Freud's elaborate theory of sex development (and mal-development) with its jumble of metaphor, analogy, and symbolism. For my own part, after many months of continuous work on soldiers suffering from functional nervous disorders, where I have had the opportunity of analysing the individual cases for prolonged periods, I have found little evidence to support this theory, and much that is out of harmony with it. Nevertheless, it is far from being wholly wrong, or a subject for anathema as some people seem to think. The only criticism of it that can be accepted by scientists is such as is based upon prolonged and detailed analysis of cases—i.e., upon psycho-analysis in the first sense of the word. Psycho-analysis as a method is free from most of the criticisms that may be brought against psycho-analysis as a theory. It is the method of so-called "free" association, whereby hidden memories and hidden relationships between conscious mental processes may be brought to light. The material obtained by its use requires interpretation, and the theory of Freud and his school is, indeed, one such interpretation. But others are possible. In any case it is unjust to reproach the method with the shortcomings or extravagances of the theory.

To avoid the confusion of these two very distinct things, it might be worth while to discover another name for the method. For this purpose I would suggest the word "autognosis." Self-knowledge is the pre-requisite of self-control and complete mental balance. When the mind begins to lose its balance through any mental cause, the shortest road back to sanity is for the patient to be given an insight into the exact nature of his mental condition and a knowledge of the mental factors which have contributed to produce it. For this a thoroughgoing analysis of the patient's mind, including analysis of his dreams and a pertinacious tracking down of the more important events of his past life, is indispensable. It is difficult to see how advance is to be made in the understanding of the mental side of psychiatrical and neurological problems in any other way. But at the present time, owing to the confusing of two things, one hardly dares mention that one employs the method of mental analysis or psycho-analysis with one's patients. The phrase inevitably calls up memories of the Freudian theory, and one is classified by anti-Freudians as the adherent of a cult to which the Freudians deny that one has been initiated.—I am, Sir, yours faithfully,

WILLIAM BROWN, M.A., M.B., D.Sc.,
Captain, R.A.M.C.; Reader in Psychology in the University of London.
4th London General Hospital, Denmark Hill, S.E., Jan. 23rd, 1916.

To the Editor of THE LANCET.

SIR,—The letter of Dr. Charles Mercier in your issue of Jan. 15th is refreshing to a general practitioner like myself who has a considerable number of neurasthenics under his care in the course of a year. Whatever is the cause of neurasthenia, it certainty is not "excessive onanism," whatever the phrase means. In what kind of people do we find neurasthenia? In strong active men of 45 or thereabouts—overworked bank managers, overworked doctors, and works managers, all of whom are trying to perform three days' work in two days. And the women? Hard-working, conscientious wives of the above, who, in addition to their domestic duties, have taken on Red Cross work, secretarial duties, or one of the thousand activities of the time. Buoyed up by the idea that a woman can hang on as long as a man, they have neglected the calls of ordinary fatigue and stuck to their jobs till they are complete mental and physical wrecks. It is gross ignorance to accuse these people of sexual perversions and abuses. I am, Sir, yours faithfully,

Jan. 19th, 1916. G. P.

THE DENTAL NEEDS OF THE ARMY.

To the Editor of THE LANCET.

SIR,—I see by *Le Temps* of to-day's date that the French War Minister is about to introduce a Bill to provide an army dental service in France. It is proposed to incorporate the qualified dentists in the hospital service and to create an army dental corps with the rank of adjutant, providing a service at the front, in the hospitals, and wherever troops are likely to pass. Thus Australia, Canada, and France admit the need of a special corps, and no doubt they have found that at the front it is the dentist that is required more than the doctor. Our English authorities seem determined to shut their eyes to one of the chief needs of the army at the present moment. We shall soon have millions of soldiers in the field, yet Mr. Tennant has recently stated that the number of army dental surgeons in France exclusive of those with the Canadians is only 43. Meanwhile many young unmarried dental surgeons and students will come under the new conscription law, and unless our authorities show a little better appreciation of the wants of the army nearly all these young men will be drafted into the ranks of the combatants, whereas they ought to be formed into an army dental corps, which is so urgently needed.

I fear it would be useless to recapitulate the arguments that I have advanced in THE LANCET periodically, for great indeed has been the obstinacy of our authorities in opposing this project.

I am, Sir, yours faithfully,

F. NEWLAND-PEDLEY, F.R.C.S., L.D.S.

France, Jan. 17th, 1916.

EUSOL.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 1st you published in the Analytical Records a notice of the preparation of the Edinburgh antiseptic "eusol." In that notice the following sentence occurred:—

"Since hypochlorous acid is the active agent concerned, we are led to believe that bicarbonate of soda might well be substituted for the boric acid, with the additional advantage that it would have acid-neutralising properties."

In this connexion may I be allowed to point out that "eusol" is a very complex mixture, consisting of hypochlorous acid, borate of calcium, and chloride of calcium? To alter one of the constituents as suggested would disturb the balance of the composition as prescribed by Professor Lorrain Smith and his colleagues. The solution of hypochlorous acid is obtained by mixing chlorinated lime with boric acid, and salts of calcium produced by the reaction are intentionally retained and are not present merely as

incidentals. It is most important that the original ingredients and their proportions be retained, as "eusol" is now being applied as an injection for the treatment of septic conditions by intravenous injections. Since your suggestion appeared, the question has been asked why the same could not be adopted and an article placed on the market, consisting of chlorinated lime and bicarbonate of sodium, instead of chlorinated lime and boric acid which is "eusol." I referred the proposition to Professor Lorrain Smith, and find that his opinion is that in the present state of investigation on the use of "eusol" only the original preparation should be employed. From a chemical standpoint the difference between the two formulæ is most interesting. Chlorinated lime, as is well known, is far from being a stable product, and is easily converted into chlorates and chlorides. Recently I have been conducting a series of experiments with "eusol," or, to be precise, "eupad"—the powder for the preparation of "eusol"—to ascertain its stability at temperatures approximating those occurring in the tropics, where the use of "eusol" is demanded. Whilst carrying out these experiments your suggestion was published and I added to my experiments a series of the combination suggested—viz., chlorinated lime and bicarbonate of sodium. The experiments were conducted at a temperature of 40° C. in sealed flasks, and the following results will show how very rapidly hypochlorous acid will be destroyed by the presence of bicarbonate of sodium.

"Eupad," 7 days at 40° C.	13·3 %	available chlorine.
Chlorinated lime, 7 days at 40° C.	22·12 %	,, ,,
Chlorinated lime and bicarbonate of sodium, 7 days at 40° C.	0·07 %	,, ,,

In valuating these figures those for chlorinated lime must be halved—i.e., 11·06 per cent.—since the other cases only contain 50 per cent. of chlorinated lime to make them comparable. Thus it is evidenced by these figures that whilst bicarbonate of sodium destroys the value of chlorinated lime as a source for the production of hypochlorous acid, the presence of the boric acid acts somewhat as a preservative. As stated, these data refer to conditions ruling under higher atmospheric temperatures than those obtained in the British Isles, but doubtless the reduction of the chlorinated lime is proceeding just the same but at a lesser rate at normal temperature. Therefore, chemically as well as medically, the presence of bicarbonate of sodium is a distinct disadvantage.

There is one other point to be kept in view. "Eusol" or "eupad" is the name prescribed by Professor Lorrain Smith to his happy and well-thought-out combination for the production of a powerful antiseptic, and cannot be applied to any other combination for the production of a solution of hypochlorous acid, otherwise "Liquor sodæ chlorinat. B.P." or "Eau de Javelle" might be used. These are alkaline solutions, and do not contain the calcium salts brought about by the interaction between chlorinated lime and boric acid, which are such important factors—only second to the hypochlorous acid, as by their presence "eusol" can be used intravenously with safety and success.—I am, Sir, yours faithfully,

R. GLODE GUYER.

The Laboratories, Duncan, Flockhart and Co., Edinburgh.

*** We comment upon this letter in an annotation drawing attention to an important report upon eusol as an antiseptic issued this week from the Department of Pathology in the University of Edinburgh at the request of the National Insurance Medical Research Committee.—ED. L.

SPECIFIC SEROLOGICAL REACTIONS.

To the Editor of THE LANCET.

SIR,—I must confess that it was with no small degree of trepidation that I ventured publicly to disregard the time-honoured convention of using diluted serum for agglutination work where diagnosis of the organism was the object of investigation. I was therefore much heartened to learn from Mr. F. S. Lister's letter in your issue of Jan. 15th that my proposal to use undiluted serum in such agglutination tests on the meningococcus group had already been anticipated by him for the differentiation of the pneumococci. Although a conventional titration of agglutinin is constantly employed, it is clear that there is of necessity no obligation strictly to apply the same method and the same formula for the diagnosis of an organism by mean of a specific serum, as one would use for testing the strength of an immune serum in regard to a given organism. This indeed is a quantitative experiment, and diminishing fractions must be elaborated, whereas when one comes to think of it, the other is essentially qualitative. How, save to bolster up a worn-out convention, can it be necessary to know whether agglutination occurs in the ten-fold, hundred-fold, or thousand-fold dilution of an immune serum, provided always that it fails to occur with control serum, for by the contrast alone is the proper position of the organism to be determined, and not by the consideration of a long series of diminishing vulgar fractions through which the phenomenon may occur? The fraction is a function of the serum and gives us once for all the value for our particular purpose of that particular serum, but it has no further part in the diagnosis for which we employ that serum.

Apart from the gain in time, there is another advantage which accrues by the use of an undiluted control serum: the difficulty due to so-called group agglutinins is practically eliminated. Let us reproduce with known factors an experiment for the diagnosis of an organism resembling a meningococcus. We should proceed to contrast its behaviour with that of a known meningococcus. Let us take for our purpose such a variety of the Diplococcus pharyngeus flavus as can easily be emulsified. We test each against the undiluted immune and control serum, and also for the present demonstration against a 1/10th dilution of these.

Occasionally the following reading will be obtained:—

—	Serum immune.	Serum control.	1/10th immune.	1/10th control.	0·85% NaCl.
Meningococcus ...	+	−	+	−	−
D. phar. flavus ...	+	+	+	−	−

Is the doubtful organism a meningococcus or not? By the first two columns, its behaviour is different from that of a meningococcus, and we can reject it accordingly. Had we, however, relied on diluted serum, our reading would have been at fault. The control serum of full strength agglutinates the pharyngeus flavus, which is not spontaneously agglutinable (see last column), whereas when diluted by ten it fails so to do. In explanation, we may suppose that normal serum possesses more feeble "group agglutinins" than an immune serum, and that dilution by ten demonstrates this difference.

I was extremely interested to see that Captain Ellis, C.A.M.C., in a recent article on classification

of the meningococci,[1] independently, and for rather different reasons, had discarded the conventional method, and was able to rely on his results when obtained with an undiluted monovalent serum. He read his results, however, in a pipette—that is to say, stopping short of spreading and staining a film. In the case of such a highly controversial subject, however, as that of the meningococcus, I prefer Mr. Lister's method, which was also mine, because the personal factor is eliminated and a record of the observations remains on the stained slides. I am, Sir, yours faithfully,

Yelverton, Devon, Jan. 19th, 1916. H. WARREN CROWE.

MIDWIVES' GRIEVANCES.

To the Editor of THE LANCET.

SIR,—In reference to Dr. Charles Porter's letter *re* "Fair Play's" note on Midwives' Grievances in THE LANCET of Jan. 1st, and your comment on it, one must conclude that the medical officer of health of Marylebone (unlike "Fair Play") does not make himself acquainted with the midwives' point of view on matters so greatly affecting them. In regard to the pressure being brought to bear on them to notify their cases, and the word "bluffing" used by "Fair Play," how would Dr. Porter describe the action of a county medical officer of health who sends printed notification forms to the midwives of his county, as if notification were obligatory (in his report he calls his action "tentative"), and the action of a health visitor under him who tells the midwives that it is an "Order in Council" (may one ask what council?)? If this does not constitute "bluffing" perhaps Dr. Porter could find a stronger and more expressive word. Should this notification pressure continue pregnant women will cease to book, there will be more emergency calls, more B. B. A. cases. Had Dr. Porter read the nursing and midwifery journals he would have seen that far from midwives congratulating themselves on (as he suggests) the inspection of lying-in homes being in the L.C.C. Public Control Department, they deeply deplore it and desire reinstatement in the Health Department, where they themselves have been since 1902. The only cause for congratulation so far is, that their homes have not been put under the borough councils with (as THE LANCET puts it) "their varying degrees of zeal and intelligence"—might one also add "honesty"? Midwives have not the same confidence in borough councillors as in London county councillors. Borough councillors may be landlords and have vested rights. Questionable homes conducted by persons unregistered and uninspected under Central Midwives Board rules may be easily "covered" locally. The *Walthamstow Guardian* recently reported that at a meeting of Leyton borough councillors, when it was to be decided whether they would take over from the county the inspection of midwives, a councillor opposed the suggestion that they, in turn, should delegate their powers under the Midwives Act, 1902, to a voluntary association of ladies to be organised for ante-natal work. Evidently these powers, in the hands of borough councillors, may be delegated lower and lower for economy's sake, and yet Dr. Porter questions the lowering of the midwife's status. He continues to discuss at great length and sarcastically the economies of the London County Council *versus* those of borough councils, but it is exactly this cheap, inexpert, second-rate, or part-time inspection under borough councils that the trained midwives of London would strongly object to. For 14 years they have been uniformly inspected by the able London County Council women medical officers, who enter every registered midwife's home to inspect case-books, registers, bags, &c., and the midwives themselves. Would it cost a penny more, as far as midwives were concerned, for this expert authority to look round the house, if need be, as she is already in it? Registered midwives are not interested as to who inspects the undesirables or the homes of the unregistered persons so long as they do not come under the same inspection. Their inspection should be purely from the medical view-point and not (as with the undesirables) from the view of wrong-doing. People should consider their noble and arduous work as life-savers and health-workers, as friends of poor mothers, and not look upon them as a set of people existing merely to be policed and harried.

I am, Sir, yours faithfully,

JANET EWART ST. CLAIR,
Honorary Secretary, Fulham Association of Midwives.

Jan. 24th, 1916.

*** We are informed that the Huddersfield sanitary authority is offering to pay to medical men or registered midwives a notification fee of 2*s.* 6*d.* for each notification of pregnancy to the medical officer of health. The notification, however, has to be made with the knowledge and consent of the pregnant woman. It will be seen by our report of the proceedings at the Central Midwives Board that the Board entirely disapproves of the delegation of the administration of the Midwives Act by the Essex County Council to certain boroughs.—ED. L.

SOLDIER'S HEART.

To the Editor of THE LANCET.

SIR,—I should like to emphasise the importance of the point made in the first few lines of your annotation on "Soldier's Heart" in THE LANCET of Jan. 22nd. The authority of Sir James Mackenzie in the matter is so great that there is some danger of a tendency to set down almost all heart conditions in soldiers as "soldier's heart"; whereas a very limited experience in the dual capacity of an examiner of recruits and a medical officer in charge of medical cases in a military hospital will, I think, convince anyone that no inconsiderable number of men with organically impaired hearts are being passed into the new armies. It seems to me that the history should have great weight in these cases, and that there should be much hesitation in diagnosing "soldier's heart" in any man with a history of past acute rheumatism or other infection unless the opportunities for observation have been adequate—more adequate, for example, than those usual in an examination by a medical board.

It is well also to remember that not many men can conjure with the wand of Sir James Mackenzie.

I am, Sir, yours faithfully,

Holmfirth, Yorks, Jan. 22nd, 1916. ROBERT H. TROTTER.

*** The point was made by Sir James Mackenzie himself. —ED. L.

DONATIONS AND BEQUESTS.—By the will of the late Miss Ellen Pearce, of Southsea, Dr. Barnardo's Homes will receive £500, and the Royal Portsmouth Hospital and the Portsmouth Victoria Association for Nursing the Sick Poor similar sums.—Mr. James Hill, M.P., has marked his unopposed return for the Central Division of Bradford by distributing 1000 guineas among 12 philanthropic institutions of the city. The Royal Infirmary will receive £400, the Royal Eye and Ear Hospital £100, the Children's Hospital £100, and the Royal Institution for the Blind £50.

[1] Brit. Med. Jour., Dec. 18th, 1915.

Obituary.

HERBERT WILLIAMS, M.D. LOND., M.D. STATE MED., D.P.H. CAMB.,

MEDICAL OFFICER OF HEALTH OF THE PORT OF LONDON.

FEW men will leave a larger circle of friends to mourn his early death than Dr. Herbert Williams, who succumbed on Jan. 16th to an attack of syncope following on a successful operation for recurrent appendicitis. Born in 1862 and educated privately, he studied at St. Bartholomew's Hospital and graduated in medicine at the University of London with honours in 1888. He then held several house appointments at the Metropolitan and his own hospital before being appointed in 1892 as assistant medical officer of health to the Port of London. Here he at once showed his administrative skill and power of control, and was largely instrumental in working out the system of medical inspection which proved at once a success in London, and a model for other ports. Thorough in everything he undertook, zealous, energetic, and loyal, his assistance to his chiefs was invaluable, and many of the important details of the work were due to his initiative. In addition to his work as assistant medical officer he had charge of the Corporation hospital for infectious diseases at Gravesend, and his control and management of this institution were marked by success. So greatly, indeed, was his work appreciated that on the appointment of Dr. W. Collingridge as medical officer of health to the City of London in 1901, Dr. Williams was by the unanimous vote of the Court of Common Council appointed medical officer of the Port without being asked to contest his election. In this enlarged sphere of action his administrative skill found a wider scope, and in the course of a few years he was known and respected throughout the civilised world. Mention should be made here also of the help which he gave to the Government in the preparation and carrying out of the regulations made under the Public Health (Pure Foods) Act, the details of which were in some points due to his intimate knowledge of the subject. He was also appointed medical officer under the Aliens Immigration Act, and his work in connexion with this has been highly commended.

Dr. Williams took a keen interest in the sanitation of ships, and the disabilities under which the British seaman suffered were ever present in his thoughts. His papers on this subject, read at the Congresses of the Royal Sanitary Institute and other bodies, are evidence of his keen and practical knowledge, and many of the improvements in seamen's accommodation given by the last Merchant Shipping Act were due to his influence. In recognition of this work he was appointed by the School of Tropical Medicine as lecturer on naval hygiene, a new departure which has borne good fruit. Firm and unyielding in administration, he was ever tactful and courteous in his bearing, disarming opposition in his opponents, and evolving affection and esteem in his friends. By his staff and colleagues he was greatly beloved, ready always to share their labours, lighten their troubles, and guide them in their difficulties. By them he will be missed for many a day, while the public health service will have cause to regret the early death of one of its most energetic and skilled representatives.

Dr. Williams was a man of many parts. Outside his professional work, he found time for social intercourse, and was a keen lover of outdoor life and sport. He was an enthusiastic golfer, and gained many trophies by his skill. He was a major in the 1st Kent Royal Garrison Artillery Volunteers and passed the School of Instruction at Woolwich, obtaining an artillery certificate and acting as adjutant of the corps during the South African War. He was a Fellow of the Royal Geographical Society, a member of the Playgoers Club, and a Freemason.

One who knew him intimately writes: "I have taken many holidays abroad with Dr. Herbert Williams and found him, without exception, the most genial companion possible for any man to have, always good-humoured, considerate, and sympathetic, and one who could see the humorous side of things under the most trying circumstances. As medical officer of health for the Port of London he deemed it his duty to acquire a knowledge of foreign languages, and he spoke French, Yiddish, Spanish, and German, never failing to produce a great impression on the minds of the many aliens with whom he came in contact. During his life he made hosts of friend, and it may confidently be said that he died without leaving a single enemy."

SAMUEL WHITE DUCKWORTH WILLIAMS, M.D. ST. AND.

Dr. Samuel Williams, who has just died at the age of 75, was little known to the present generation, but the fruits of his work remain and flourish. He was the son of Dr. William White Williams, the medical superintendent of the Gloucester County Asylum, who was among the pioneers of the present humane system of the treatment of the insane.

Dr. Samuel Williams was a student at St. Bartholomew's Hospital, and matriculated at London University. Owing to his father's illness he was unable to complete his course there, and ultimately took the St. Andrews degree. After assisting his father at Gloucester for a year, he was appointed assistant physician at St. Andrew's Hospital, Northampton, and there helped to carry on his father's great work of reform. Here, too, he instituted the new departure of taking mental patients to the seaside for change of air and scene. Later he was appointed assistant physician, under Dr. Lockhart Robertson, to the Sussex County Asylum at Haywards Heath, and in a few years succeeded him as head of that institution till 1888. It was largely due to his methods and skilful organisation that this asylum became a model of excellence and efficiency. His writings, although few, were of deep interest and always well considered. His first publication in 1866 was on the sedative action of digitalis in acute mania. His most important contribution was about the same period, and took the form of a systematic exhibition of bromide in epilepsy, which was begun at Northampton in 1864. This investigation was thorough, scientific, and unbiassed by excess of enthusiasm.

In addition to all the anxious and arduous work which the management of an asylum involved, Dr. Williams found time for many other interests. He was a prominent Freemason in Sussex. He was a crack shot, a safe golfer, a keen fisherman, and a good mountaineer; but perhaps the chief joy of his life was music, which he understood thoroughly. He was for 30 years a member of the Athenæum Club. A very reticent and retiring man, he was full of kindness and sympathy, and many will feel the loss of a learned physician and a courteous friend.

The War.

THE CASUALTY LIST.

THE following names of medical men appear among the casualties announced since our last issue:—

Died.

Lieutenant J. Le K. Mavety, R.A.M.C., attached to the Royal Field Artillery, graduated M.D. in Canada.

Lieutenant-Colonel H. B. Yates, Canadian A.M.C., attached to No. 3 Canadian General Hospital.

Died of Wounds.

Captain C. L. Spackman, R.A.M.C.

Wounded.

Lieutenant R. E. Thomas, R.A.M.C., attached to the 1st Battalion Rifle Brigade.

Captain H. F. Wilkin, R.A.M.C. (T.F.), attached to the 5th Battalion Durham Light Infantry (T.F.).

THE HONOURS LIST.

The following awards to medical officers are announced:—

Distinguished Service Order.

Captain Alexander Findlater, 1st London Mounted Brigade Field Ambulance, R.A.M.C. (T.F.).

For conspicuous gallantry and devotion to duty on several occasions, notably on Sept. 29th, 1915, at Chocolate Hill, Gallipoli Peninsula. He crossed over 200 yards of open ground under very heavy shell fire to render aid to two wounded men. He saved the life of one, but the other was beyond help.

Military Cross.

Temporary Lieutenant John Wesley Gilbert, R.A.M.C. (attached 9th Brigade, R.G.A.).

For conspicuous gallantry and devotion to duty near Ypres on Dec. 29th, 1915. After three attempts he succeeded in entering a farm, which was being heavily shelled with gas and other shells, and rendered valuable assistance to the wounded infantry who were billeted there.

Distinguished Service Cross.

Surgeon Dermot Loughlin, R.N.

Surgeon Loughlin attended the wounded on board the *Comet* under a heavy fire at close quarters in connexion with the advance on Kut-el-Amara on the night of Sept. 23rd, 1915.

Mentioned for Services with the British Naval Mission in Serbia.

Temporary Surgeon Edward Rowland Alworth Merewether, R.N.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Captain A. de T. Mouillot, 51st Sikhs, only son of the late Dr. F. A. de T. Mouillot, of Harrogate.

Lieutenant-Colonel E. W. Grimshaw, 62nd Punjaub Regiment, eldest son of the late Dr. T. W. Grimshaw, C.B., sometime Registrar-General of Ireland.

Major E. Colson, 41st Dogras, eldest son of Surgeon-Major Colson, I.M.S.

Lieutenant P. H. Myles, 41st Dogras, eldest son of Major E. H. Myles, R.A.M.C.

ANTITYPHOID INOCULATION IN FRANCE.[1]

Nowadays every recruit and soldier in the French army under 35 years of age is compulsorily inoculated against the enteric group of diseases—i.e., typhoid and paratyphoid A and B. The vaccine now employed is the polyvalent form prepared according to the method devised by Professor Vincent of the Val-de-Grâce—the French Army Medical Headquarters. A vaccine is also issued to afford protection against paratyphoid A and B. Organic heart and lung disease as well as affections of the kidney and liver are regarded as absolute contra-indications to antityphoid inoculation; indisposition, from whatever cause, as a temporary impediment. The men who are to undergo inoculation are kept at rest, not being allowed to leave their rooms on the day of inoculation or the following day; a light meal is given without wine or other form of alcohol. Should severe headache be complained of a dose of gr. viii. to xvi. of acetylsalicylic acid is given. The most stringent asepsis is, of course, insisted upon, the syringe and needle being boiled after each operation. Tincture of iodine is used to disinfect the skin; the site usually chosen for the injection is the left infraspinal or deltoid region, the injection being made very slowly. The rule is to inoculate with polyvalent vaccine all men who have not been inoculated for at least two years and who have not had typhoid within the previous five years. The special paratyphoid vaccine is employed for men who have not been inoculated against paratyphoid for at least two years or have not had an attack of paratyphoid within the last five years. Two injections are made at an interval of eight days, but the second injection is not given in cases where the reaction to the first was very violent and attended with a marked rise of temperature or symptoms such as severe headache and vomiting.

Antityphoid vaccination behind the lines in France.

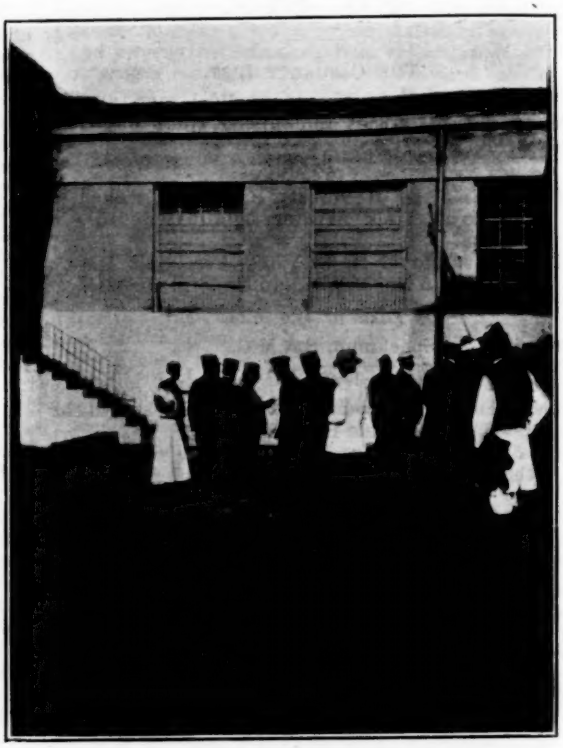
[1] From data kindly furnished by Dr. Baradat, chief medical officer of the Aix-les-Bains hospital district.

THE WORK OF THE ROYAL FREE HOSPITAL UNIT IN SERBIA.

A member of the unit sends us the following:—

The Royal Free Hospital Serbian unit, organised and led by Mr. James Berry, F.R.C.S., and Mrs. F. M. Dickinson Berry, M.D., B.S., left England in January, 1915, to found a surgical hospital of 100 beds in Serbia. The party arrived in Serbia just when the typhus epidemic was at its height. In Nish the death-rate among the war prisoners was 60 per cent., Uznitze had lost all her doctors save an Austrian captive, Valievo was in quarantine, and so, in spite of the fact that the unit was designed for surgery, the majority of the staff applied to be sent to some plague-stricken spot to help against the scourge which was raging amongst the population. But the Serbian Government, alarmed at the loss of life among the British units already stationed at Uskub and Kraguevatch, decreed that the work must remain surgical in character, and sent the mission, along with the British Red Cross unit, to Vrnjatchka Banja, a small watering place almost free from typhus, some 50 miles N.W. of Nish. Here a hydropathic hotel was commandeered, the large dining-room turned into a main ward, a douche bathroom became the receiving room, a steam bath the operating theatre, a radiant light bathroom the sterilising room, while the clerk's office had all the windows plastered up and became the sulphur room in which clothes were disinfected. Soon the operations enlarged and the village school was absorbed. While this was in progress, suddenly the Serbian medical authorities sent a batch of 60 patients, all of whom had already or soon developed typhus in a most virulent form. The position was quite changed. The Red Cross had taken over the local medical barracks, and though we wished to cöoperate, the place was too small for both units, and it was decided to build. Owing to Mr. Berry's energy and enthusiasm a long wooden building was run up in incredibly short time on the Serbian labour standard. In the meantime the typhus patients were nursed in the small bedrooms of the hospital, a difficult task as they each required constant individual care and a measure of restraint in delirium. To guard against the risk of further infection measures were arranged in common with the Red Cross unit. One of the hot sulphur springs of the town provided a central bath in which all new arrivals were washed and head, pubic, and axilla hair shaved, passing thence into a quarantine hospital under Mr. E. Ulysses Williams, hastily adapted from the "State" café. Here the patients were kept for ten days until, all danger of developing typhus being over, they were distributed amongst the various hospitals of the town.

FIG. 1.



The Commandant of the Royal Free Hospital unit interviewing an international sanitary commission.

The accumulating number of slightly septic cases with wounds which would not heal, and of crippled Austrian prisoners who could not be repatriated, necessitated further extension which was found in the "Merkur," a large villa in the park. The threat of a hostile advance in May and of a great influx of wounded led to still further enlargement, and the "Athene," another big villa standing in the main street of the town, was got ready with the help of a band of Austrian prisoners. The number of beds was thus brought up from an initial estimate of 100 to a possible 450, in spite of the fact that some of the staff, their three months' contract over, had returned to England. The problems presented were mainly sanitary, for the Serbs' domestic habits were uncleanly. Surgery was for the time relegated to the second place, and Mr. Berry became a sanitary engineer. With the assistance of Mr. Jan Gordon, engineer to the unit, the existing lavatories of the villas were cemented down, the overflowing cesspools thoroughly drained and then concreted over, and a dry-earth system instituted. The hardest task was to induce the patients to use the system in a clean and healthy manner. The yard of the "State" café was a filthy swamp: drains were laid in this. With the help of an intelligent Austrian prisoner destructors and boilers were built; the model was afterwards adopted by the Serbian sanitary authorities. Hands were laid upon the town water-supply and soon a rivulet of clean waste water was flowing down the open gutter of the main street, washing away the deposits of refuse which had accumulated there. The local engineer

FIG. 2.

The out-patient department of the Royal Free Hospital unit in Serbia.

viewed these activities with disfavour, and openly said that when the unit had gone he would tear up all that had been done.

The spring coming on, with the ever-present danger of typhoid in mind, the commandant turned his attention to the sanitary conditions of the town itself. The worst obstacle to his energies was the chief of police, who cordially detested the English disturbers of his peaceful life. After much persuasion the Serbian Government was induced to remove him and appoint a new and more energetic character in his place. Mr. Berry then took over the local sewage works, a large field belonging to the town engineer and known as "the insanitary patch." About this time Dr. Helen Boyle arrived, bringing with her a model iron destructor and a "Thresh" disinfector. Unluckily, the disinfector went astray, visiting Alexandria and Malta before it was eventually rescued from the wharves of Salonica some three months later.

The local slaughter-house was visited one day almost by accident. It was an old wooden shed erection, built across a stream which washed the village from end to end and received successively the drainage from the typhus barracks, all the village hospitals, and the market-place, in spite of which the water was used for washing and cleaning both house and meat. The old wooden walls were caked with accumulated blood of years, but the meat was hung up on them. It had always been so—why alter it? The commandant decided to build a small modern slaughter-house as an object-lesson. The Liberal Club of Liverpool having subscribed £200 through Mr. Lyon Blease for Serbian needs, £100 of this was set aside for this purpose, to which Mr. Berry himself added £100.

At this point a quarrel ensued between the State and the commune as to which should possess this treasure, but the commandant, ignoring the smaller issues, pushed steadily on with his object, organising Austrian prisoners who could hew or build and getting transport wagons to cart the material. A motor-car which Dr. Boyle brought with her was of the greatest assistance in hunting cement from one part of the country, iron from another, and in the search for pumps, cisterns, and all the innumerable necessities of construction. The foundation-stone was laid with great ceremony, the commandant making a speech in Serbian. The building was well advanced, but the roof was not yet on when the news of the Austrian invasion was confirmed. Wounded poured into the town. The commandant left his building activities and returned to the operating theatre. Transport had been promised to the hospital in case it should be necessary to retain its usefulness by a retirement with the Serbian army, but at the last moment Sir Ralph Paget announced that the Serbian Government could provide no wagons and advised all men of military age who were not doctors to withdraw to avoid permanent internment. The commandant calmly faced the prospect of capture, anxious only to roof his slaughter-house before the enemy arrived so that it might escape wanton destruction.

The engineer who had previously travelled over the passes between Montenegro and Serbia was placed by Sir Ralph Paget in charge of an expedition of the men who were to try to escape. After this had left a chance traveller on the road reported that he had passed through Vrnjatchka Banja just before the Austrians occupied it, and saw the commandant with an assistant sitting on the roof of the slaughter-house hurriedly nailing on boards. One of the V.A.D. nurses has since reported considerate treatment by the Austrians. The devotion of the commandant to these matters is illustrated by a story which is told of him. On being offered an honorary colonelcy in the Serbian army, after a moment's thought the answer came: "I would rather be appointed official sanitary officer to Vrnjatchka Banja."

In reviewing the work of the unit in Serbia it is evident that although little of the expected surgical work was possible, yet the sanitary arrangements will remain as an object lesson to the townspeople, assuming the willingness to learn. In the hospital work the low mortality amongst the typhus patients was remarkable, amounting to about 3 per cent., including several cases which were brought in moribund. In the summer, when surgical cases were diminishing, good work was done amongst the peasantry by Dr. Helen Boyle, who sometimes saw as many as 100 out-patients in a morning. (Fig. 2.) Tuberculosis and diphtheria were specially prevalent. Mr. Berry was joined later by Dr. J. B. Christopherson, director of the Khartoum Hospital, who remains a prisoner with him.

THE LONDON GENERAL BASE HOSPITALS: THE REDUCTION IN THE À LA SUITE STAFFS.

Instructions have been received from the D.D.M.S., London District, at the London General Base Hospitals, for a considerable reduction in the personnel of the hospitals. The work will be done by the resident staffs under the superintendence of certain members of the à la suite staffs. The method of reduction is on a drastic scale. A small staff of surgeons and physicians is retained—three surgeons and two physicians will be, it is understood, the usual number—and other medical officers, formerly members of the à la suite staffs, are to be summoned in their seniority as the influx of patients demands, standing down as the patients leave the institutions.

THE CRIMES OF THE GERMAN ARMY.—The current number of the *Field* contains an illustrated supplement devoted to the Crimes of the German Army. The frontispiece is the group "Resistance" carved in stone upon the Arc de Triomphe in Paris, to which the editor has attached the legend: "And I saw the Beast and the Kings of the Earth and their armies gathered together to make war against him that sat on the horse and against his army," and on the following page is a reproduction of an Assyrian bas-relief in the British Museum showing an ancient conception of "frightfulness." The text opens with letters from the Ambassadors of France and of Belgium welcoming the publication and with a foreword by the editor in which he quotes from President Poincaré's speech of July 14th, 1915, commencing: "The vengeance of history will proclaim ..... the atrocities committed by the Germans to terrorise the innocent population on their march, the prostitution of science to methods of violence and savagery." The crimes are set out in orderly sequence and as nearly as possible in the words of the witness; names have been omitted, but the status of the witness indicated in each case with a reference to the evidence of the Bryce Commission where this was the authority. This record of horror is fittingly broken by woodcuts from Holbein's Todtentanz printed at Lyons in 1538. The restraint thus shown in the choice of illustration serves to enhance the narrative. Twenty pages of photographs of actual scenes of desolation and of the apostles of culture responsible for them complete the supplement.

THE HEALTH OF KING CONSTANTINE OF GREECE.—A Swiss correspondent writes: "Professor Kraus, who, with Professor Eiselsberg, of Vienna, was summoned to Athens for a consultation on King Constantine's health, has just returned to Berlin, where, with Teutonic thoroughness, he has communicated the intimate details of his mission. Professor Kraus states there is a sinus several centimetres in length which has not closed up since the King's last operation, and out of which a little secretion has to be expressed daily. There is no fistula of the lung present. The heart and lungs are perfectly normal. There is only the usual tendency for the opening of the sinus to close prematurely, resulting in an accumulation of secretion in the deeper part and a rise of temperature from septic absorption. The Greek Government was naturally alarmed at the King's high temperatures although he was otherwise perfectly well, conducted difficult affairs of State, and participated in all court functions. He has even put on weight, has a fresh complexion, and shows evidence of his former vigour.

THE Wounded Allies Relief Committee, Sardinia House, Kingsway, W.C., would be very grateful for the gift of a water-bed (3 ft.) for one of their hospitals.

THE High Commissioner for New Zealand sends us a lively story of a field ambulance at Anzac from the pen of Mr. Malcolm Ross, the official war correspondent with the New Zealand Forces. One incident may be given here. A section of the ambulance was landed from a destroyer in the darkness of the night and, after having with difficulty found a small corner of unoccupied beach, they erected a tortoise tent, got in the wounded at once, and when dawn came dug themselves in as well as they could. On the spot thus found in the dark they remained for three months.

OBITUARY OF THE WAR.

DOUGLAS WHIMSTER KEILLER MOODY, M.D. ABERD.,

SURGEON (TEMPORARY), ROYAL NAVY.

Surgeon D. W. K. Moody, who lost his life on Dec. 30th, 1915, in the explosion which took place on H.M.S. *Natal*, was 42 years of age, and the son of Mrs. M. Moody, of Hull, formerly of Montrose. His great grandfather founded the firm of Messrs. James Keiller and Sons, Dundee. He was educated at Montrose Academy and Aberdeen University, where he graduated M.B., C.M. in 1900, taking his M D. two years later. After graduating he held house appointments at the Peterborough Infirmary, the Central London Infirmary, and Addenbrooke's Hospital, Cambridge. He then settled in London, becoming surgeon to the Peninsular and Oriental Steamship Company. In August, 1915, he was given the commission of surgeon in the Royal Navy and was for some months at Haslar Hospital. He had just spent his furlough at Hull and contributed an interesting article on tuberculous meningitis to our columns when he was killed on his ill-fated ship. Douglas Moody had acquired a wide medical culture in his visits to London, Dublin, and Berlin, and his contributions to medical literature covered a considerable range. We learn from personal friends that to his surgical ability he added a courteous and considerate bearing, a fondness for children and animals which was reciprocated by them, and no little facility in writing verse.

ALBERT GUY MILLER, M.B., B.S. MELB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. G. Miller, who was killed in France on Dec. 29th, 1915, at the age of 31, was the fourth son of Albert Miller, of Melbourne. He was educated at Trinity College, Melbourne, where he graduated M.B., B.S. in 1909, and secured one of the resident appointments at the Melbourne Hospital. It was his intention to devote himself exclusively to ophthalmology, and with this end in view he was house surgeon at the Victoria Eye and Ear Hospital and then became assistant to Dr. Percy S. Webster. Coming to England in 1913, he was clinical assistant at Moorfields and took the Diploma in Ophthalmology at Oxford. When war broke out he joined the Royal Army Medical Corps and was attached to the 12th Middlesex Regiment, with which he remained until the time of his death. He was killed instantaneously by the explosion of a rifle grenade in the trench he occupied. Outside medicine, Captain Miller excelled in sport, and had played cricket for Melbourne University. Music was his great hobby, and although very reticent about his skill he was quite an authority on the history of music and played the piano, violin, 'cello, and organ. A friend writes of him: "He stood 6 ft. 3 in. and was a big man in all senses of the word: he simply couldn't do anything mean or petty, and at the same time was so unassuming that even his friends did not know all his gifts. He was keen on the scientific side of optics, and up to the time of his death was studying optics and range-finding with the Royal Garrison Artillery. By all with whom he came in contact, soldiers and colleagues, he was beloved." He leaves a widow, Marjorie, elder daughter of Mr. J. A. Levey, of Melbourne.

FREDERICK MILLER JOHNSON, M.D., CH.M. EDIN., M.D. MELB.,

MAJOR, AUSTRALIAN MEDICAL CORPS.

Major F. M. Johnson, who was killed in action at Anzac on Nov. 29th, 1915, at the age of 51, was the elder son of the late Mr. G. J. Johnson, of Melbourne, and great nephew of the late Sir William Gull. He was educated at Horton College and the Hutchins School, Hobart, and after studying for one year at the Melbourne University came to this country and studied medicine at Edinburgh, where he took the M.B., Ch.M. degrees in 1886 and the M.D. in 1888. He never actually studied in London or took his degrees there, but was resident at one of the London hospitals for a year after he became qualified. He subsequently continued his studies in Paris, Vienna, and Heidelberg, and returned to Australia in 1888, where he settled down in Albert Park, Melbourne, and soon acquired an extensive practice. He took the M D. Melb. in 1891. He gave himself ungrudgingly to the service of his patients, and in an unusual degree earned the affection of those with whom he was brought into contact whatever their station or degree. For he did not consider that his duty consisted merely in treating their maladies, but found many ways of assisting those who needed help, if possible, without their knowledge. At the outbreak of war he offered himself to the service of his country, and with the rank of captain joined the 6th Ambulance of the Australian Expeditionary Force, with which he arrived in Egypt in June, 1915. He landed at Anzac with his contingent, and for many weeks was exposed to the hardship and danger of the trenches. On one occasion, whilst he was talking to his sergeant, the note-book which he held in his hand was shot away by a fragment of shell. Whilst on the Gallipoli Peninsula he acted as Divisional Sanitary Officer, and in November, 1915, was promoted to the rank of major. He was killed by the bursting of a high-explosive shell, and his death was instantaneous. He married Miss E. Saville Kene, who survives him, and he has left a daughter and one son, who is now in Egypt with the Australian Contingent.

LIVERPOOL MEDICAL INSTITUTION.—At the annual meeting of this institution, held on Jan. 20th, the following office-bearers and members of council were elected:—President: Charles J. Macalister. Vice-Presidents: R. J. Hamilton, W. J. Fleetwood, Frank H. Barendt, and Walter T. Clegg. Treasurer: Llewellyn Morgan. General secretary: Hubert Armstrong. Secretary of ordinary meetings: John Hay. Secretary of ordinary meetings (elect): John Owen. Secretary of pathological meetings: Frank H. Barendt. Secretary of pathological meetings (elect): J. Martin Beattie. Librarian and editor of journal: R. W. MacKenna. Council: Reginald T. Bailey, W. Allen Daley, F. M. Gardner-Medwin, Thomas Guthrie, Walter C. Oram, Claude Rundle, Gerald Wallace, Mary Birrell Davies, Frank A. G. Jeans, George W. Pollard, Joseph A. Sanderson, and A. Frank Walker.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

Surgery.—H. H. Bailey (Section I.), London Hospital; D. M. Hunt (Sections I. and II.), London and Middlesex Hospitals; L. Kahan (Section II.), London Hospital; G. L. T. Lawlor (Sections I. and II.), St. Mary's Hospital; I. H. Lloyd (Section II.), Westminster Hospital; T. C. Russell (Sections I. and II.), St. Mary's Hospital; and A. J. A. Wilson (Sections I. and II.), Royal Free Hospital.

Medicine.—P. H. G. Bayon (Sections I. and II.), Genoa and King's College Hospital; C. B. de Forest (Sections I. and II.), Michigan; J. Y. Dent (Sections I. and II.), King's College Hospital; J. Fox-Russell (Sections I. and II.), Middlesex Hospital; and G. L. T. Lawlor (Section II.) and J. G. T. Thomas (Sections I. and II.), St. Mary's Hospital.

Forensic Medicine.—G. S. Ashby, King's College Hospital; P. H. G. Bayon, Genoa and King's College Hospital; C. B. de Forest, Michigan; H. M. Gray, Guy's Hospital; and L. Kahan, London Hospital.

Midwifery.—C. B. de Forest, Michigan; H. M. Hobson and R. F. Jarrett, London Hospital; E. O. Morrison, Cambridge and St. Mary's Hospital; R. H. Pettersson, St. George's Hospital; J. Remers, Manchester; H. N. D. Richards, St. Mary's Hospital; C. Segal, Berne; and L. Zarchi, Petrograd.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: C. B. de Forest, D. M. Hunt, G. L. T. Lawlor, I. H. Lloyd, T. C. Russell, J. G. T. Thomas, and A. J. A. Wilson.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At examinations for triple qualification passes, which were concluded on Jan. 21st, the following candidates were successful:—

FIRST EXAMINATION.

Alice Fung-a-Ling, Alexander Forsyth Caddell, Gwilym ap Vychan Jones, William Gibb, and David Gilmour.

Physics.—Michael Joseph Quinlivan, Lizzie Robertson Clark, and Norman Herbert Mackay.

Biology.—Michael Joseph Quinlivan, Robert Berry Forgan, William Harvie Kerr, and Mayberry Hugh Carleton.

SECOND EXAMINATION.

Eliza Jean Stuart, Thomas Talmage Read, Cyril Trist Gasking, Andrew Francis Brigimen, William Brownlee Watson, Patabedimuhandirange Martin Fernando, and George Patrick de Silva.

Anatomy.—Andrew Buchanan Macdonald.

Physiology.—John Kohler Steel, Donald Mackay, Leo Hugo Peries, and David Levenstein.

THIRD EXAMINATION.

Spearman Charles Swinburne, James Henry Brown, Robert McLaren, William Bruce Lawson, Robert Gloag Battersby, Benjamin Ajajl-Young, and Thomas Jackson.

Pathology.—Edward Glyn Jones.

Materia Medica.—Alexander Balfour Black, Christopher Robert Cecil Moon, and Mohammed Talaat.

FINAL EXAMINATION.

The following candidates were admitted L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. & S. Glasg.:—

Thomas Cormac MacGowan, Claud Aldous Slaughter, Theodore Clement van Derzeil, Alexander William McGregor, Charles Kinsley Carroll, George Lynn Pillans, L.D.S., William Lyle Paterson, David Scott Taylor, David Singaravel Luther, and Donald Saunders Graham.

Medicine.—Thomas Jackson and John Bygott.

Surgery.—Robert Christian Wilson Spence, Bertram Conrad Haller, and John Edward Kitchen.

Midwifery.—Andrew Smith, Jun., and John Ross.

Medical Jurisprudence.—Harry Ellison, James Wallace Gordon, Stanley Wall Hoyland, Thomas Hardie, James Stewart Durward, Alexander Morrison, James Virgil Reynolds Rohan, Gilbert Llewellyn Stanley, James Young McLean, Edward Mervyn Lewis Morgan, Reginald John Thomas Malcolm-Gasper, William Bruce Lawson, and John Gray McKendrick Macaulay.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on Jan. 20th, Sir Francis H. Champneys being in the chair. A letter was considered from the clerk to the governors of St. Bartholomew's Hospital regretting that they had no opportunity of expressing their views upon the Board's proposals to extend the minimum period of training for midwives to six months. The Board decided that the governors of St. Bartholomew's Hospital be informed that public notice of the Board's intention to extend the period of training was given on March 11th, 1915, and that the Central Midwives Board believed that all those engaged in the training of midwives kept themselves informed of the proceedings of the Board.—A letter was considered from the secretary of Queen Charlotte's Hospital asking the Board to postpone the operation of the new rules of training until January, 1917. A letter to the same effect was considered from the secretary of the City of London Lying-in Hospital. The Board directed that both institutions should be told that the postponement asked could not be granted, and that it must be assumed that those engaged in the training of midwives kept themselves informed of the proceedings of the Board. Correspondence with the chairman of the committee of the Dempster Cottage Nurses Home, Hale, Farnham, with regard to a certified midwife whom the committee had found it necessary to dismiss from their employ was considered. The Board decided that, as the person who charged the midwife with improper conduct is unwilling to take steps to substantiate the charges brought, the Board is unable to take any action in the matter. A letter was considered from the county medical officer of health of Cambridge inquiring the view of the Board on a suggestion recently made by the Local Government Board that nursing associations might be utilised for the nursing of persons suffering from measles. A letter to the same effect was considered from the county medical officer of health of Gloucestershire. The Board decided (*a*) that with regard to the letter from the county medical officer of health of Cambridge, the Board refer him to Rule E. 5 so far as it relates to such cases. (*b*) That with regard to the letter from the county medical officer of health of Gloucestershire, the Board refer him to Rule E. 5 so far as it relates to such cases. A letter was considered from the county medical officer of Essex informing the Board that the county council of Essex has decided to delegate the administration of the Midwives Act within the county to any borough with a population of 20,000 presenting a maternity and infant welfare scheme approved by the county council. The Board decided that the county medical officer of health of Essex be informed that the Board greatly regrets to hear that the Essex county council proposes to delegate its powers and duties under the Midwives Act, 1902, and suggests that the county council should reconsider its decision, as in the opinion of the Central Midwives Board such delegation is bound to impair the effective administration of the Act.

A special meeting of the Board was held at Caxton House, Westminster, on Jan. 21st, Sir Francis H. Champneys being in the chair. A number of midwives were struck off the roll, the following charges, amongst others, having been brought forward: Being convicted of drunkenness; the midwife neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 13, and paying only three visits to the patient after the confinement. A patient suffering from retained placenta the midwife did not, until urgently solicited by the patient's mother, explain that the case was one in which the attendance of a registered medical practitioner was required, as prescribed by Rule E. 20 (3), and medical aid having been sought for the patient she neglected to notify the local supervising authority thereof, as required by Rule E. 21 (1) (a). Not being scrupulously clean in every way, as required by Rule E. 1; being unable to make use of a clinical thermometer, and consequently not complying with Rule E. 13; neglecting to take and record the pulse of patients at each visit, as required by Rule E. 13; not understanding the use of antiseptic precautions, as required by Rules E 3 and 7, and not keeping a register of cases, as required by Rule E. 23. Being convicted of having performed an illegal operation and thereupon sentenced to nine months' imprisonment with hard labour, and that when attending patients the midwife did not wear a clean dress of washable material, as required by Rule E. 1.

AT the last meeting of the President and Fellows of the Royal College of Physicians of Ireland Dr. W. H. Thompson was re-elected King's Professor of the Institutes of Medicine in the School of Physic, Trinity College, Dublin.

AT a general meeting of the Röntgen Society, to be held at the Institution of Electrical Engineers on Feb. 1st, at 8.15 P.M., Dr. Sidney Russ will open a discussion on the Injurious Effects Produced by X Rays. The following, amongst others, will take part in the discussion: Sir James Mackenzie Davidson, Mr. H. E. Donnithorne, Dr. E. H. Rodman, Dr. G. Gilbert Scott, Dr. F. Bailey, Dr. C. Thurstan Holland, and Dr. R. Morton. Dr. Herschel Harris will give a demonstration of lantern slides obtained in Gallipoli.

SANATORIUM TREATMENT IN EDINBURGH.—Our Edinburgh correspondent writes: In the report on "Economy in Municipal Expenditure" of the City of Edinburgh, issued recently by Mr. Paton, the City Chamberlain, it was suggested by him that the city should curtail its sanatorium scheme for the relief of tuberculosis, on the ground that the cure of the individual and the eradication of the disease were not attained by sanatorium treatment, and that expenditure on sanatoriums was therefore largely futile. Economy in expenditure of the city funds would, he contended, gain by reduction in the number of such institutions. It is true that a proportion of cases treated in sanatoriums are not wholly cured, but it is thoroughly recognised that in cases which are placed under sanatorium treatment in early stages of the disease the results obtained are much more satisfactory. Dr. A. Maxwell Williamson, the medical officer of health, said in his annual report for 1914: "The sanatorium has its place, and it must properly be regarded as a most useful adjunct in an attempt to deal effectively with the disease. There appears just the danger, however, of attaching an altogether undue importance to it." And Dr. J. Guy, the tuberculosis officer, says: "The housing question is one of the vital points in dealing with the problem of tuberculosis; hitherto we have heard a good deal about sanatoria, &c., and, unfortunately, too little about the housing of the people." These reports make it evident that a sanatorium treatment must be backed by the whole organisation of a tuberculosis scheme, and that neither housing crusade nor sanatorium system can stand alone, while it is evident that Dr. Williamson and Dr. Guy do not support Mr. Paton when he advises that sanatorium work in Edinburgh should be curtailed and that attention should be more exclusively devoted to the housing problem. The Edinburgh sanatorium scheme has engaged the careful attention of the public committee and has received the sanction of the Local Government Board, which carries with it a certain share of Exchequer grants. The Board's approval implies a right for the corporation to participate in the capital sum voted under the Insurance Act for the provision of sanatoriums and in the so-called maintenance grant, which equals one-half of the net expenditure on tuberculosis, including not merely maintenance *per se*, but also redemption and interest on capital. These shares of grant were earned by Edinburgh through the adoption of a complete scheme. If, therefore, the scheme suffers partial mutilation a corresponding decrease must be expected from the Government grants, and the expense to the city of the sanatorium treatment of tuberculosis would probably be greater than it is now—i.e., the cost of the Edinburgh scheme in 1914 was £19,000. Towards this cost the Burgh Insurance Committee contributed £3600, leaving a balance of £15,400. Of this balance the State would defray one half, or £7700, leaving the remaining £7700 as the total charge against the corporation. Whereas if the council resolve to curtail their scheme to the extent of £5000 per annum, and in so doing forfeit the approval of the Local Government Board, they would lose the grant from the State and also the contribution from the Insurance Committee, who are not permitted to make grants to local authorities whose institutions are not approved by the Board. In the event, therefore, of the Board not approving of the curtailment of the scheme, no contribution from either the State or the Insurance Committee could be expected, and the corporation would thus be required to meet the whole of the £14,000, an increase over the present arrangement of £6300, with a reduction in efficiency equivalent to, say, 70 occupied beds per annum, capable of treating some 200 patients for four months each.

THE LATE LIEUTENANT WALTER H. B. MACDONALD.—The death took place at Craigleith Hospital on Jan. 22nd from the effects of acute appendicitis, of Lieutenant Walter H. B. Macdonald, who had a long and noteworthy record of work in the public service. He was 57 years of age, and when the war broke out he offered his services again to the authorities, and they were accepted. For a time he was stationed as medical officer at Redford, and thereafter he was transferred to Carlingnose, where, until his death, he occupied the position of medical officer in charge of the troops of the Forth defences. Lieutenant Macdonald was appointed in 1888 principal medical officer to the British East Africa Company, and when the territory became a protectorate he was appointed to a similar position. He possessed the war medal and clasp for Witu, the clasp for Mwele, and a letter of thanks from the Admiralty for his services to the wounded of the Naval Brigade there. He was present at the bombardment of Zanzibar, and received a letter of thanks from the Sultan and was presented with a sword, while he was appointed a Member of the Order of the Brilliant Star of Zanzibar, in 1895. Lieutenant Macdonald acted as medical officer under Lord Hardinge on the Anglo-German Boundaries Commission, 1898. He was awarded the Central African medal and clasp for Uganda, 1897–98, and the general service African medal with clasp for Uganda, 1900. For his services there he was the recipient of a letter of thanks from Lord Lansdowne. He was also awarded the British East Africa medal, 1902.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

End of the Session.

THE session of Parliament which now comes to an end has been in existence since November, 1914. A new session will commence in the course of next month. The attention of both Houses of Parliament has been devoted exclusively to matters arising out of the war.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 19TH.

Recruits and Defective Vision.

Major LANE-FOX asked the Under Secretary for War whether many otherwise suitable men were being rejected from enlistment on the ground of defective sight; whether there were already many men serving in the British Army and wearing glasses and proving quite capable of efficient service; whether there was a large proportion of the German army wearing glasses; and whether it was necessary to condemn as inefficient the men who came up for attestation without glasses but whose sight could be remedied with them.—Mr. TENNANT replied: The policy advocated by the honourable and gallant gentleman is that already followed. The minimum standard for eyesight for general service is low and soldiers are given glasses to bring their sight more nearly to the normal, but there are cases where even glasses would not bring the sight to a standard sufficient for general service, and in these cases soldiers would not be accepted for general service. I have seen photographs of batches of captured Germans and I have noticed that many wear spectacles, but I have not personally any insight into the German practice other than what I have derived from such source of information.

Major LANE-FOX: Is it a fact that there is a considerable amount of evasion of military service at the present time by men whose eyesight is not seriously defective?—Mr. TENNANT: The honourable and gallant gentleman will be glad to know that instructions have been given, and have been in force for some time, that a mere statement of inadequacy of vision is not regarded as a sufficient reason for excusing military service.

Medical Men and the Lighting Order.

Replying to Mr. PERKINS, Mr. H. SAMUEL (the Home Secretary) said with regard to the new Lighting Order: The use of headlights is prohibited in certain areas, but the limits of size and power for sidelights have been fixed high enough to allow a good driving light for medical men and other motorists who have to use country roads at night. The order was settled in consultation with expert motorists and has been generally accepted.

THURSDAY, JAN. 20TH.

Supply of Medical Men for the Army.

Mr. TENNANT (Under Secretary for War), answering Mr. LYNCH, said: Thanks to the patriotism of the medical profession there is no present anxiety regarding the supply of doctors for the army, and the action of the Central Medical War Committee with which the Director-General of the Army Medical Service is in touch will be careful to guard the interests of the civil population in this matter, the claims of whom have not been, and will not be, disregarded.

Treatment of Nerve Shock: Army Cases.

Mr. SHIRLEY BENN asked the Under Secretary for War to give the names of the lunacy institutions which were being used in whole or in part for the accommodation of unwounded soldiers invalided through transient loss of balance or mental disorder; and whether those institutions were under the jurisdiction of the Lunacy Board of Control.

—Mr. TENNANT said in reply: The institutions are Springfield War Hospital, Wandsworth; the Napsbury War Hospital, Napsbury, St. Albans; the Red Cross Military Hospital, Maghull, near Liverpool; and the War Hospital, Peebles, N.B. The institutions mentioned above have been taken over by the War Office and are entirely under its control.

Army Medical Service.

Mr. TENNANT informed Mr. LYNCH that there was no conflict of authority between the Director-General of Army Medical Services in England and the Director-General of Medical Services in France. Medical units in the field were under the orders of the Commander-in-Chief to dispose of in any way he thought fit.

Mr. LYNCH asked the right honourable gentleman whether those retired officers of the Royal Army Medical Corps who had been called up for active service were now receiving full pay of rank in addition to full pension, and, if not, what pay was each surgeon-general and each colonel receiving.—Mr. TENNANT replied: Yes, sir, with the exception of a small number of surgeon-generals who have given their services in posts of a grading not commensurate with that rank and draw £600 a year in addition to pension.

Artificial Limbs for Soldiers.

Sir GEORGE TOULMIN asked the Under Secretary for War whether the best available artificial limbs were being supplied to officers and men who had lost limbs in the war; whether the whole cost was paid by the State; and if not, what proportion was paid in the case of officers and men, respectively.—Mr. TENNANT answered: Officers are given such sum as the Army Council consider sufficient to defray the necessary expense of providing the artificial appliances. Artificial limbs for men are provided and prepared at the public cost for men who lose limbs in the war. I would add that an institution has been opened at Roehampton House where all men who have lost limbs can go and have the artificial limbs fitted under the advice of expert orthopædic surgeons. The men are also taught how to use the artificial limbs.

Medical Men and Military Service.

In Committee on the Military Service Bill, Mr. KING moved as an amendment to include in the schedule of exceptions "men who at the time of the passing of this Act were fully qualified medical practitioners or registered dentists or students in any hospital." He said that he moved the amendment for the purpose of obtaining an assurance that the form of words which the Government was going to introduce for those who were doing national service should include not only medical men but medical students in their fourth and fifth year, who were not taken by the War Office now for military service. He also wished that the case of dentists should be considered.

Mr. RAFFAN supported the amendment. At the present moment the death-rate in the country was increasing. He did not say that this was entirely due to the fact that so many medical men had been called away. It was also due to other reasons, although, no doubt, it was accentuated by the fact that the people of this country were unable to get the medical attention which they secured in normal times. Therefore it would be a very wise provision to exclude medical men from the scope of the Bill. What applied to medical men applied equally to dentists. There were only 5400 registered dentists in the country altogether, and a number of them had already been taken away by the War Office. There were parts of the country where the dental needs of the people were wholly unmet by registered dentists and were provided by unregistered men quite qualified by training and experience, possessing the confidence of the public.

Mr. GLYN-JONES said that every member of a profession who was needed in this country would be certain to get exemption under Clause 2 of the Bill. A tribunal could exempt a person on the ground that it was expedient in the national interest that instead of being employed in military service he should be engaged in other work. Surely if a medical man were to require a certificate of exemption the tribunal, knowing that the medical profession was so short, would decide that it was expedient in the national interests that the applicant should be permitted to continue the work of his practice. His honourable friend suggested that the exemption should be extended to unregistered dentists. In that case any man who could extract a tooth would be entitled to call himself an unregistered dentist, because there was no sort of definition. He could not help thinking that it was much safer to let everyone take his chance under the Bill as it now stood.

Mr. LONG (President of the Local Government Board) replied: The question of fully qualified medical men has, I confess, given me from the earliest stages of this Bill very considerable anxiety, because it is literally true that those engaged in the administration of the public health laws of the country, and those whose business it is, as it is mine, to watch the general conditions of health in the country and to become acquainted with the supply of medical men and the demands made upon them, cannot view the present situation with anything but grave anxiety. I believe very few people in the country realise, as those of us who are constantly face to face with the official facts realise, how tremendous has been the labour thrown on our medical men since the outbreak of the war and how unselfishly and heroically they have devoted themselves to their work. I know men who are working day and night in order that the suffering and the sick in their districts shall not go unattended, and many of them with no return whatever. Many of them will be paid very little. We cannot therefore view this matter with anything but anxiety and perhaps some misgiving. The honourable Member who spoke last has, however, put the case in its right proportions. There are, as the Committee knows, two methods by which those who come within the purview of the Bill may be released from service, the exemptions and the exceptions. It would, I think, be a very dangerous proceeding to include in the automatic exceptions all the medical men and dentists. It would enable those to claim exemption and escape from military service who might be very undesirable members of their respective professions, and who might be much better fighting the enemy with a rifle or a pistol at the front than fighting diseases in this country. It is, on the other hand, quite obvious that all who belong to those professions and whose services are required should, where the interests of the country demand it, be retained in their practices and should continue to do their present work. Their case is already met. I hope the Committee will agree that I have justified the position which the Government has taken up, and have shown that we have not arrived at this conclusion without a full review of all the circumstances and facts and without considerable anxiety as to the present position in the country.

Sir R. FINLAY said that as a representative of a constituency which has a great many medical men he had listened with great satisfaction to the right honourable gentleman. The shortage of medical men even at the present time was undoubtedly extremely serious, but he thought for practical reasons the course which the Government was taking in this matter was the right one. A medical man who was wanted would get exemption because it would be apparent that it was inexpedient he should be taken away to serve in the army. It would not be wise to introduce the broad exception and he hoped that the amendment would not be pressed.

Mr. RAFFAN: The President of the Local Government Board, as I understand it, is to give general directions to the local tribunal, and I would suggest that he might keep specifically in view the retention of those who are engaged in work contributing to the health of the community.

Mr. LONG: Certainly.

Mr. HOLT hoped that the right honourable gentleman would promise to represent to the army that they ought not to take even volunteers among medical men and dentists unless they wanted them in connexion with their own professional duties.

Mr. LONG: It is my intention to make it quite clear that medical men ought not to be allowed to take unnecessary risk unless they can be spared from work which I consider equally important. I took the step the honourable Member (Mr. Holt) suggested four or five months ago, and I have been endeavouring to impress upon the War Office that they really must exercise a little discretion and care in the demands they make upon medical men for the war.

The amendment was negatived without a division.

TUESDAY, JAN. 25TH.

Compulsory Military Service and Vaccination.

Answering Mr. KING, Mr. TENNANT said: A soldier who is deemed to have been enlisted under the Military Service Bill will not be deemed to have consented to vaccination.

Royal Army Medical Corps Officers and Income-tax.

Mr. WATT asked the Chancellor of the Exchequer whether, accompanying the pay of the officers of the Royal Army Medical Corps sent to them in December, there was a notice saying that income-tax would in future be deducted at the rate of 1*s.* 9 3/5*d.* in the £; and, if so, would he say whether this notice was in conflict with his statement that these incomes would be subject only to a deduction of 1*s.* 6*d.* in the £, even though the general tax was raised to a higher level.—Mr. MCKENNA said in reply: I understand that no general notice of the nature suggested has been issued to officers of the Royal Army Medical Corps. I may, however, point out that under the Finance (No. 2) Act the proper rate of deduction from the pay of officers whose total income exceeds £300 and does not exceed £1000 is for the year ending April 5th, 1916, 1*s.* 9 3/5*d.* in the £.

Pay and Promotion in the R.A.M.C. (Special Reserve).

Mr. LAURENCE HARDY asked the Financial Secretary to the War Office whether temporary lieutenants of the Royal

Army Medical Corps and captains received considerably higher pay than captains, Special Reserve, Royal Army Medical Corps, although in many cases the latter officers served before the war, whilst the former had no previous experience; whether there had been no promotion in the Special Reserve, Royal Army Medical Corps, since the war beyond the rank of captain, though there were now in this service 543 captains of the Special Reserve as against 39 at the outbreak of war; and whether he could see his way to giving equal pay and opportunities for promotion in this branch of the Royal Army Medical Corps as were enjoyed by the other branches of the medical services—namely, Regulars, Territorials, and temporarily enlisted.—Mr. FORSTER wrote in reply: Captains, Royal Army Medical Corps, Special Reserve, receive the same pay as captains, Royal Army Medical Corps, Regular Army. Their emoluments are nearly the same as those of temporary lieutenants or captains serving under civil contract. The large number of captains in the Special Reserve is due to recent promotions, and can hardly be made a reason for further promotions. The senior captain in the Special Reserve has less service than the senior captain in the Regulars. It does not appear that officers of the Special Reserve are at a disadvantage.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

HANAFIN, D. J., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Clonaslee District of Queen's County.

HAWKINS, A., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Resident Medical Officer at the Royal National Hospital for Consumption, Ventnor, Isle of Wight.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—House Surgeon Salary £200 per annum, with residence, board, &c.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried. Salary at rate of £125 per annum, with board, lodging, and washing.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and laundry.

DUNROSSNESS PARISH.—Medical Officer and Vaccinator. Worth over £600.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Clinical Assistants in Out-patient Departments.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Senior and Junior House Surgeon.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.—Assistant Dental Surgeon.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Curator of Museum.

SCARBOROUGH HOSPITAL AND DISPENSARY.—House Surgeon. Salary as arranged, with residence, board, &c.

SUNDERLAND ROYAL INFIRMARY.—Female House Surgeon. Salary £150 per annum, with board, residence, and laundry.

SURREY, CULSDON AND PURLEY URBAN DISTRICT COUNCIL.—Deputy Medical Officer of Health. Salary at rate of £150 per annum.

WANDSWORTH UNION INFIRMARY, Ouseley-road, Balham, S.W.—Assistant Medical Officer, unmarried. Salary at rate of 5 guineas a week, with board, lodging, and washing.

WESTMINSTER, CITY OF.—Tuberculosis Officer and Assistant Medical Officer of Health. Salary at rate of £500 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Castleknock, in the county of Dublin; at Glaslough, in the county of Monaghan; and at Llanberis, in the county of Carnarvon.

Births, Marriages, and Deaths.

BIRTHS.

CROSS.—On Jan. 21st, the wife of Dr. H. R. Cross, Storthes Hall Asylum, Kirkburton, near Huddersfield, of a son.

FISHER.—On Jan. 24th, at Shoreditch Infirmary, London, N., to Dr. and Mrs. Fisher, a boy.

LEGG.—On Jan. 18th, at Lessingham-avenue, Tooting Graveney, the the wife of Cyrus Legg, M.R.C.S., L.R.C.P. Lond., of a son.

LOCK.—On Jan. 24th, at Herschel House, Cambridge, the wife of Norman F. Lock, M.A., M.B. Cantab., F.R.C.S. Eng., Lieutenant, R.A.M.C., of Boston, Lincs., a son.

MILBURN.—On Jan. 8th, at Desford, near Leicester, the wife of Captain F. Valentine Milburn, R.A.M.C. (T.F.), of a daughter.

POPE.—On Jan. 17th, at St. Leonards-on-Sea, the wife of Charles A. W. Pope, M.B., Lieutenant, R.A.M.C., of a daughter.

MARRIAGES.

BARFETT—HANCOCK.—On Jan. 11th, at Christ Church, Surbiton, Rev. J. C. F. Bartett, Vicar of Halestown, Cornwall, to Mary Deborah Hancock, M.A. (T.C.D.), L.R.C.S. Edin., L.F.P.S. Glasg.

BROOKES—POWELL-JONES.—On Jan. 19th, at the Parish Church, Hampstead, Arthur Stanley Brookes, Lieutenant, R.A.M.C., to Gertrude Mabel, daughter of Mrs. Powell-Jones and the late Morgan Powell-Jones, J.P.

DOBSON-SMYTH - CALEY.—On Jan. 21st, at St. John's Church, Windsor, William James Dobson Smyth, Lieutenant, R.A.M.C., to Constance Muriel, second daughter of Hugh A. Caley and Mrs. Caley, of Thornbury House, Windsor.

JUPP—PASCOE.—On Jan. 12th, at All Saints', Frindsbury, Edgar Norman Jupp, M.R.C.S., L.R.C.P. Lond., of Chard, to Elizabeth Maud, second daughter of the Rev. S. and Mrs. Pascoe, of Newquay, Cornwall.

KNEVITT—THORP.—On Jan. 8th, at St. Benedict's, Ealing, Herbert Knevitt, M.R.C.S., L.R.C.P. Lond., to Alice Marian, daughter of the late Rev. W. Thorp, B.D.

LLOYD—WATHEN.—On Jan. 19th, at St. Michael and All Angels, Kingstone, William Frank Lloyd, Lieutenant, R.A.M.C., to Margaret, younger daughter of the late T. W. Wathen, of Bridge Court, Herefordshire.

MILLIGAN—MOORE.—On Jan. 15th, at St. Ann's, Highgate, E. T. Campbell Milligan, Captain, R.A.M.C., to Josie Sarah, younger daughter of the late Philip Moore and Mrs. Moore, of Moorlands, Hay, New South Wales.

MORLEY—SIMON.—On Jan. 12th, at Stowmarket, John Morley, Ch.M., F.R.C.S., Captain, R.A.M.C. (T.F.), 1/1st East Lancs. Field Ambulance, to Mary Ogilvy Simon.

SINCLAIR—SOUTER.—On Jan. 8th, at Forres, N.B., Neil Frederick Sinclair, M.R.C.S., L.R.C.P. Lond., to Chrissie Stewart, second daughter of Mr. and Mrs. J. F. Souter, of Roseville, Forres.

SMITH—BRADLEY.—On Jan. 24th, at Holy Trinity Church, Eltham, Stanley Alwyn Smith, D.S.O., M.D., M.Ch., F.R.C.S. Edin., Captain, Canadian Army Medical Corps, to Pearl Evangeline, daughter of Mr. N. D. Bradley, of New York, U.S.A.

WATKIN—RICHARDS.—On Jan. 18th, at All Saints, Margaret-street, W., Arthur Christopher Watkin, Captain, R.A.M.C. (T.F.), to Annie Eileen Wynn, eldest daughter of the Rev. W. L. and Mrs. Richards, of Welshpool.

WATT—GARLE-BROWNE.—On Jan. 25th, at Westminster Cathedral, James Watt, M.A., M.B., D.P.H. Aberd., to Dorothy Muriel, elder daughter of the late Mr. John Garle-Browne, of Bufton Lodge, Desford, Leicestershire.

WRIGLEY—HOLMES.—On Jan 18th, at St. Andrew's Church, Shifnal, by the Rev. J. K. Swinburne, B.A., Philip Roscoe Wrigley, F.R.C.S., of Manchester, to Gwendolen Mary, daughter of Edwin Holmes, Esq., of Russell House, Shifnal.

DEATHS.

BALE.—On Jan. 12th, at Heathbank, Stockport, William Barker Bale, M.R.C.S., L.R.C.P. Lond., aged 49 years.

MACILWAINE.—On Jan. 19th, at Clevedon, Somerset, Sydney Wilson Macilwaine, M.R.C.S., L.R.C.P. Lond., aged 61 years.

O'CONNOR.—On Jan. 21st, at St. James' Court, Buckingham Gate, London, W., Lieutenant-Colonel W. Moyle O'Connor, 6th London Field Ambulance, son of the late Mr. Patrick O'Connor, Dublin, and brother of Mr. P. J. O'Connor, Dublin. Funeral on Jan. 24th at Glasnevin Cemetery, Dublin. R.I.P.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
Transactions of Medico-Legal Society, 1914-15. Edited by R. Henslowe Wellington. Vol. XII.

BALE, JOHN, SONS, AND DANIELSSON, London.
The Triangular Bandage. By Howard M. Preston. With Introduction by James Cantlie, M.A., M.B., F.R.C.S. Price 1s. net.

CHURCHILL, J. AND A., London.
St. Thomas's Hospital Reports. New Series, Vol. XLII. Edited by Dr. J. J. Perkins and Mr. C. A. Ballance. Price 8s. 6d. net.
Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXXV. Session 1915. Price 12s. 6d. net.

CONSTABLE AND CO., LIMITED, London.
Elementary Textbook of Economic Zoology and Entomology. By Vernon Lyman Vellos and Rennie Wilbur Doane. Price 6s. 6d. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
A Manual of Surgical Anatomy. By Lewis Beesly, F.R.C.S. Edin., and T. B. Johnston, M.B., Ch.B. Price 12s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

THE EARLY HOME OF DR. RICHARD MEAD (1673–1754).

A CORRESPONDENT writes: During a temporary residence in the East-End my attention has been called to a matter of more than local interest. It appears that the London County Council is contemplating a change in the name of Garden-street, Stepney, and that in opposition to this alteration a petition has been presented by the minister and deacons of the Stepney Meeting House, who are the largest owners of the property. The petition states that the street in question stands upon the site of the old-time garden and orchard of the parsonage of the Meeting House, from which it derived its name; and that in the middle of the seventeenth century the Nonconformist minister of Stepney was the Rev. Matthew Mead, who, two years after the Restoration, was ejected from his living and withdrew to the continent. Upon his return to England he resumed his ministry at Stepney where, in August, 1673, his son Richard was born; and 16 years later (1689) "the Meeting House settled the house and appurtenances on its pastor and his heirs because of his losses through religious persecution." In 1696, after completing his studies at Leyden and Padua, Richard Mead settled in practice in the place of his birth, and in 1699 Mr. Mead made over the Garden-street property to his son, who was himself a deacon of the Meeting House, upon the occasion of his marriage with Ruth Marsh. For some years Mead continued to practise physic in Stepney with a success and superiority of skill which raised his reputation to such a height that he was called to give his opinion during Queen Anne's last illness, his prognosis, which foretold her speedy dissolution, being borne out by the event. He was then only 29 years of age. In the following year (1703), in consequence of his being appointed physician to St. Thomas's Hospital, he moved his residence to the City to be nearer to the scene of his future activities; but he retained the Stepney property till 1740, when it was sold for £400. Passing through several hands the estate was offered for sale in building plots in 1816, when Garden-street came into being; since which time the trustees of the Meeting House have been able to purchase various lots at a cost of £1500, until to-day they find themselves the owners of almost half the property. Historical association with the greatest physician and bibliophile of his day ought to be sufficient to secure for the petitioners the preservation of the descriptive place-name of Garden-street.

SUPERSTITIONS CONCERNING MENSTRUATION.

To the Editor of THE LANCET.

SIR,—To the effects on women recorded by Dr. Raymond Crawfurd in his lecture appearing in your columns on Dec. 18th, 1915, I should like to add the reference in Lucretius's "De Rerum Naturæ," vi., 794 seq. This passage says that if a woman take castor oil while menstruating it causes her to swoon.

I have wondered whether the penalty imposed by Cæsar on the inhabitants of Gergovia, that of making all the women march round with their garments rolled up to their armpits (De Bello Gallico, Bk. vii.) was associated with a wish to blight the crops of the district.

I am, Sir, yours faithfully,

Birmingham. JAMES RAE.

THE HISTORY OF MEDICINE IN WALES.

THE contrast between medicine in Wales to-day and in those early times when it was a curious mixture of herbal lore, astrology, and shrewd common sense, formed the subject of an address delivered by the President, Mr. J. Lynn Thomas, C.B., at the meeting of Undeb y Brythoniaid (Union of Ancient Britons) held at Mason's College, Birmingham, on Dec. 4th, 1915. The address is published in the December issue of the *Welsh Outlook*. The first neighbourhood dealt with is that of the river Towy, where associations of great interest in medicine are to be found. On one side of this river are the birthplaces of two physicians "whose names will live as long as history lasts"—Rhiwallon, who lived in the thirteenth century, and Sir John Williams, who is still with us, and who "has added to his great fame in medicine an equal one in the work he has done in connexion with the evolution of the Welsh National Library at Aberystwyth." On the opposite side of the Towy is the home of Dr. Harris of Cwrt-y-cadno, a name intimately associated with Welsh national folk-lore. At a time so remote from us it is rather startling to be told that the Gwyddoniaid, or wise men, spent some of their time in discussing such modern questions as "How to destroy flies," or "How to reduce fatness." Light is thrown on the habits of our ancestors by aphorisms, having for their purport the advice that he who goes to bed supperless will not need a doctor. "Three moderations will produce long life: in food, labour, and meditation." In dealing with Welsh place names which may be directly or indirectly associated with medicine, Mr. Lynn Thomas referred to the large number bearing the prefix "Yspytty," that is to say Spittal, or a place where hospitality is dispensed. Rhyd-y-Clafwr, in Denbigh, and Clafdy, in Lleyn, near Pwllheli, are associated with the isolation of lepers; and it is interesting to note that the laws of Hywel Dda (Howel the Good) enacted that "a married woman whose husband became leprous was entitled to a divorce and to the restitution of her dowry." By the time of Edward III., however, the disease seems to have died out. The passing of the monk physicians gave place to the barbour-surgeon, whose chief duty was to bleed and scarify, the succeeding evolution of medicine in Wales passing through much the same phases as in England. The quack and the bone-setter are no strangers, neither is the cancer curer unknown. Incidentally, Mr. Lynn Thomas mentioned a legal enactment in force nearly 1000 years ago in Wales, which finds its counterpart to-day in the development of medical defence or protection societies. The conclusion of the address summarised the more recent advance in popular and preventive medicine in Wales, including reference to the National Memorial to King Edward VII. and the Welsh National Medical School.

THE PROHIBITION ORDER AND BRITISH WINES.

IN THE LANCET of Jan. 8th attention was drawn to the sale by grocers of raisin and ginger wines during prohibited hours. Acting on this and other reports the Temperance Council of the Christian Churches communicated with the Central Control Board (Liquor Traffic), and received a reply, from which we extract the following:—

> The Order deals with the sale of intoxicating liquor. This is a well-known term, and is defined in the Licensing (Consolidation) Act, 1915, as meaning (*inter alia*) "sweets and any fermented, distilled, or spirituous liquor which cannot, according to any law for the time being in force, be legally sold without any excise licence."
>
> By the Finance Act (1909–10), Act, 1910, s. 52, "Sweets" means "any liquor which is made from fruit and sugar, or from fruit or sugar mixed with any other material, and which has undergone a process of fermentation in the manufacture thereof, and includes British wines, mead, and metheglin.
>
> It therefore appears that the vast majority of these so-called temperance drinks are within the operation of the Order.

WHITAKER'S ALMANACK.

Whitaker's Almanack for 1916 reaches us somewhat later than usual with an editorial remark that the delay has been due largely to causes arising out of the war. We can well believe that the compilation of the Almanack under present circumstances must have been a difficult task. The current issue contains 858 pages, as compared with the 890 of last year. Considerable space is devoted to matters connected with the war, such as trading with the enemy, British and enemy trade, and a national dyeing scheme. The diary of the war is continued down to October, 1915, and is supplemented by two articles on the naval and military operations of the past 12 months. The honours lists are greatly increased in length, while the Navy and Army lists are curtailed. The general information for which the business man consults the almanack will be found occupying its accustomed place and both from its range and its accuracy it makes a marvellous compilation. The astronomical data also remain.

THE EARTHQUAKE OF JAN. 14TH.

MEDICAL men have had special training in the accurate observation and record of small stimuli and in their appreciation by the various sense organs. They can therefore probably be of special assistance to Mr. Charles Davison, Sc.D., F.G.S., who is collecting data of the slight earthquake shock which was widely felt in the Midland Counties on Jan. 14th. Mr. Davison asks for information on the following points: 1. Place of observation. 2. Situation of observer, on which floor of the house. 3. Time of occurrence. 4. Nature and duration of the shock. Did it consist of two parts, and, if so, which part was the stronger and how long was the interval between them? 5. Was the shock strong enough (*a*) to make doors, windows, &c., rattle; (*b*) to cause the observer's seat to be perceptibly raised or moved; (*c*) to make chandeliers or pictures swing? 6. Was any unusual sound heard at the time and what did it resemble? Replies can be sent to him at 16, Manor-road, Birmingham.

NICKEL-CHROMIUM WIRE FOR THE BACTERIOLOGICAL LABORATORY.

THE thirty-third annual report of the Provincial Board of Health of Ontario, Canada (Toronto. 1915. Printed and published by L. K. Cameron), contains a useful suggestion for economy in bacteriological technique by Mr. H. M. Lancaster, B.A.Sc., chemist to the provincial board of health laboratories, Toronto. Bacteriologists requiring large quantities of platinum wire for routine work in the laboratory or for the use of student classes will find nickel-chromium wire of some assistance. This alloy heats readily and cools quickly, and is not rapidly disintegrated by repeated heating and cooling. A very useful instrument may be made from a three-inch length of No. 22 Brown and Sharpe gauge wire inserted in an eight-inch handle of 3/16 inch aluminium rod. Nickel-chromium wire in all gauges is supplied by any of the larger firms dealing in such alloys. It may be obtained from manufacturers of electrical supplies, and it is used under the trade name "Nichrome" as resistance wire in the heating elements of many modern heating devices. The cost of nickel-chromium is less than 1 per cent. that of platinum.

A SUCCESSFUL HETEROPLASTIC GRAFT.

THE *New York Medical Times* in its summary of medical progress for the year 1915 (vol. xliv., No. 1.) quotes an operation by Rothchild, who was possibly the first to succeed with the procedure originated by Lexer in 1911. The procedure was tested on a soldier who was shot in the buttock, with the result that a tight traumatic stricture formed in the urethra and urine came away from the exit wound in the thigh. A fairly healthy appendix was removed from another soldier, a portion of the first patient's urethra excised, and a prepared length of appendix sutured in place as a substitute. The patient was supervised for 60 days, and was then doing well with daily sounding.

BOVRIL PICTURES.

Messrs. Bovril, Limited, of Old-street, London, have forwarded us copies of the three bonus pictures of their current picture scheme, the largest being framed and the other two unframed. The large picture, a gravure 28½ × 16½ inches, an artist's proof of an engraving after a painting by Mr. R. Wheelwright, is entitled "Joan of Arc," and depicts the heroine saint of France on a white horse with mounted guards on either side, after she had been taken prisoner. Her face is uplifted with an obvious appeal to Heaven for help. Of the smaller pictures one is entitled "Bedtime Stories," by Mr. Arthur J. Elsley, showing two pretty children in night attire and the young mother reading an amusing story whose interest is reflected in the faces of the children. The size is 14½ × 21 inches. The remaining picture, of the same size, is called "A Chip of the Old Block," likewise by Mr. Elsley, and depicts a soldier in khaki with his right arm in a sling, seated in an armchair and his little son in naval rig-out has entered the room and greets his father with a salute. The excellent reproductions are the work of Messrs. C. W. Faulkner and Co., London.

Dr. A. F.—Our opinion is that our correspondent is liable in both cases, as each is a male servant.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 26th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 20	30·00	S.W.	....	67	50	45	43	45	Fine
,, 21	30·05	S.W.	0·12	60	56	44	49	50	Overcast
,, 22	30·15	W.	....	70	54	50	52	54	Overcast
,, 23	30·50	S.W.	....	74	51	39	42	45	Fine
,, 24	30·13	S.W.	....	73	51	45	49	50	Raining
,, 25	30·36	S.W.	0·03	69	49	41	40	42	Fine
,, 26	30·25	S.W.	....	64	52	42	44	46	Overcast

The following magazines, journals, &c., have been received:—Cornhill Magazine, Journal of Chemical Technology, Il Morgagni, Annales de Médecine, Albany Medical Annals, Review of Neurology and Psychiatry, Archives of Radiology and Electrotherapy, Surgery, Gynecology and Obstetrics, Tropical Diseases Bulletin, Dublin Journal of Medical Science, American Journal of Medical Sciences, Bulletin de l'Office International d'Hygiène Publique, Philippine Journal of Science, Proceedings of the Royal Society of Medicine, Pharmaceutical Journal, Canadian Practitioner and Review, Asclepios, Revista Médica del Uruguay.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Prof. W. Bateson and Mr. C. Pellew: Note on an Orderly Dissimilarity in Inheritance from Different Parts of a Plant.—Mr. H. M. Woodcock: Observations on Coprozoic Flagellates, together with a Suggestion as to the Significance of the Kineto-nucleus in the Binucleata (communicated by Prof. S. J. Hickson).—Mr. S. B. Schryver: Investigations Dealing with the Phenomena of Clot Formations. Part III., Further Investigations of the Cholate Gel (communicated by Prof. V. H. Blackman).—Mr. J. M. O'Connor: On the Mechanism of Chemical Temperature Regulation (communicated by Mr. J. Barcroft).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Feb. 2nd.

SURGERY (Hon. Secretaries—Raymond Johnson, J. Murray): at 5.30 P.M.

Paper and Demonstration:
Dr. F. Hernaman-Johnson: The Use of Condensers in the Diagnosis, Prognosis, and Treatment of Nerve Lesions.

N.B.—Members of the Sections of Medicine, Neurology, and Electro-Therapeutics are specially invited to attend.

OPHTHALMOLOGY (Hon. Secretaries—Elmore W. Brewerton, Arthur W. Ormond): at 8.30 P.M.

Papers:
The Cause of the Ophthalmoscopic Appearances in Amaurotic Family Idiocy: by the late Mr. George Coats (to be read by Mr. R. Affleck Greeves).
Mr. Holmes Spicer: Superficial Linear Keratitis.

Short Communication:
Mr. Walter Edmunds: Cataract in Experimental Thyroidectomy.

Cases:
Mr. J. Herbert Fisher: Arterio-venous Aneurysm.
Mr. Harold Grimsdale: Dilated Retinal Vessels; and other Cases.

Thursday, Feb. 3rd.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Cuthbert Lockyer, H. Russell Andrews): at 8 P.M.

Specimens:
Dr. Herbert Spencer and Dr. E. A. Barton: Speculum-camera.
Dr. Herbert Spencer: (1) Tubular Needle for Silver Wire; (2) Needle-holder for Pelvic Work.

Short Communications:
Dr. Walter Salisbury: Three Cases of Labour obstructed by Ovarian Cyst.
Dr. Frances M. Huxley: Fatal Rupture of Bladder in the Puerperium.
Dr. M. Handfield-Jones: Chorion Epithelioma following Vesicular Mole.

Paper:
A discussion on the "Clinical Aspect of the Double Uterus" will be introduced by the President, Dr. M. Handfield-Jones.

Friday, Feb. 4th.

LARYNGOLOGY (Hon. Secretaries—Cecil Graham, Frank Rose): at 4 P.M.

Cases:
Will be shown by Dr. Dan McKenzie, Dr. Edmond, Mr. Lambert Lack, Dr. Stuart-Low, and others.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Discussion on the Injurious Effects produced by X Rays (opened by Dr. S. Russ). Sir James M. Davidson, Mr. H. E. Donnithorne, Dr. E. H. Rodman, Dr. G. G. Scott, Dr. F. Bailey, Dr. C. T. Holland, Dr. R. Morton, and others will take part in the discussion. Demonstration:—Dr. H. Harris: Lantern Slides obtained in Gallipoli.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY.—4.30 P.M., Paper:—Hon. Lady Parsons: Women's Work During and After the War.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Pathological Meeting. Specimens will be shown by Major McAdam Eccles, Dr. A. Saunders, Mr. N. B. Harman, Dr. R. Morton, Dr. H. J. Banks Davis, Dr. Bernstein, Mr. Gray, Mr. Souttar, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

FRIDAY.—5 P.M., Hunterian Lecture:—Sir John Bland-Sutton: New Ulcers for Old—Jejunal for Duodenal Ulcers.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY.—3 P.M., Prof. C. S. Sherrington: The Physiology of Anger and Fear. (Lecture III.)
FRIDAY.—5.30 P.M., Prof. W. Bateson: Fifteen Years of Mendelism.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1915 were given in THE LANCET of Dec. 25th. 1915.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1915 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 4*d.*

To be obtained on application to the Manager, accompanied by remittance.

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THE Secretary of the War Office has issued the following order:—

The public are informed that on and after Saturday, November 6th, newspapers, magazines, books, and other printed publications (other than trade circulars) will not be sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. Persons desiring to send newspapers, &c., to neutral European countries should, therefore, give their orders for execution to publishers or newsagents who have obtained such permission.

The Publisher of THE LANCET has obtained the required permission of the War Office, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Communications, Letters &c., have been received from—

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[*Acknowledgments continued on next page.*

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